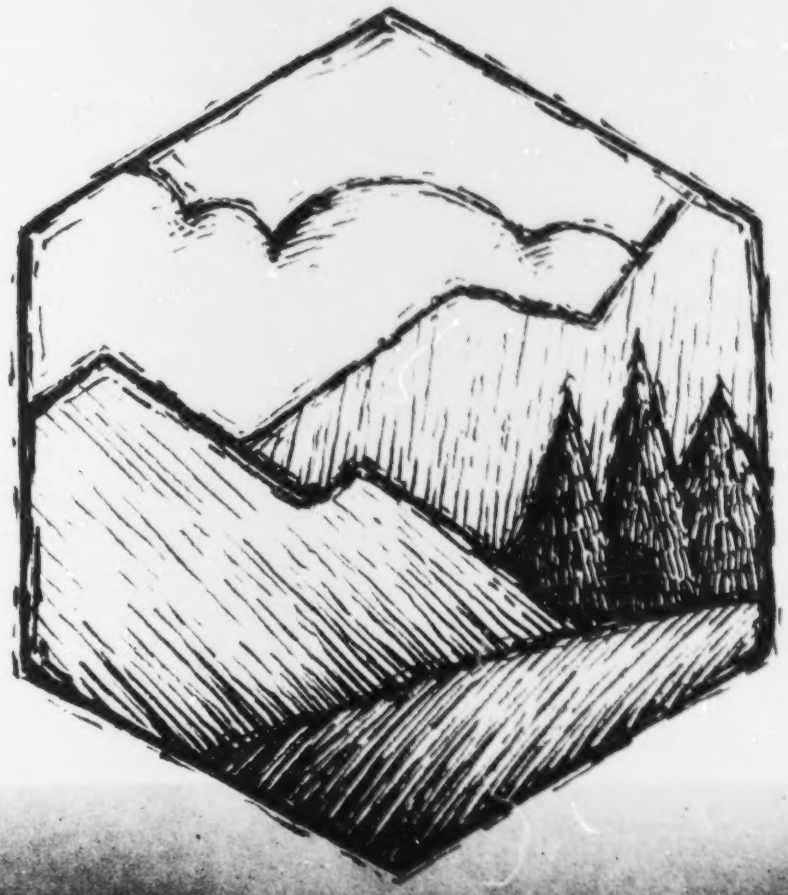
WHITEHORSE

WILDLAND PARK

Management Plan



Alberta
ENVIRONMENT
Natural Resources Service

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Whitehorse Wildland Park Management Plan

Prepared By:

Whitehorse Wildland Park Planning Team
and
Whitehorse Wildland Park Public Advisory Group
Northern East Slopes Region

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Alberta
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APPROVAL STATEMENT

The Whitehorse Wildland Park Management Plan is Alberta Environment's official plan for the park.

The plan is a commitment by the Northern East Slopes Region for the protection and management of resources, and the provision of backcountry recreational opportunities within Whitehorse Wildland Park.

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This plan is consistent with the provision of the Provincial Parks Act and Regulations and with provincial policies, priorities and direction.

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Date July 20, 2000

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Date July 24, 2000

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VISION STATEMENT FOR THE PARK

"Whitehorse Wildland Park will be managed through clear direction to maintain natural ecological diversity, ecological processes, and native species and their habitats, as well as to preserve rare and significant natural features, while providing opportunities for compatible backcountry recreation and educational opportunities."

This mission statement was developed cooperatively between the Whitehorse Wildland Park Advisory Group and Alberta Environment.

1.0 INTRODUCTION

Whitehorse Wildland Park was designated as a Wildland Park on August 27, 1998 [1]. The Wildland Park is located in the northern front ranges of the Rocky Mountains, where it represents a rich diversity of alpine and subalpine features, unequalled in the province. It shares a portion of its western boundary with Jasper National Park and includes both the previously designated Cardinal Divide Natural Area and the Cadomin Cave area. The 174 km^2, (43,093 acre, 17,439 hectare) Wildland Park is located 60 kilometres south of Hinton near the hamlet of Cadomin. (See Figure 1. Whitehorse Wildland Park Location Map).

1.1 ENVIRONMENTALLY SIGNIFICANT AREAS OF WHITEHORSE WILDLAND PARK

Environmentally significant areas are defined as important, unique and often sensitive features of the landscape.

Whitehorse Creek Valley – The largest part of the Wildland Park is taken up by this east-west lying valley. It encompasses Whitehorse Creek from the boundary of Jasper National Park in the west, to the McLeod River near the unimproved Grave Flats Road, south of Cadomin, in the east. Whitehorse Creek is the largest local tributary of the McLeod River, and fed by smaller tributaries, mainly the Drummond and Harlequin Creeks. There is also a rare vegetated rock glacier at the head of Drummond Creek (Achuff, 1984). This whole area is prime habitat for grizzlies and bighorn sheep, as well as other carnivores and ungulates. Fiddle Pass is one of the few passes in this region that penetrates the mountain barrier through to Jasper National Park. Whitehorse Creek is also breeding territory for the harlequin duck, a sensitive species, which requires special management considerations.

[1] Order in Council 354/98

Cardinal Divide – This wide ridge separates two major watersheds. To the north, the McLeod-Athabasca Rivers drain to the Arctic Ocean and to the south, the Cardinal-North Saskatchewan Rivers drain into Hudson's Bay. The Cardinal Divide is thought to be a Glacial Refugium (Strong, 1999), which was ice-free during the last Wisconsinan ice age, because it contains a wide diversity of alpine flora, some of which are not found elsewhere in the park (Achuff, 1984).

Cadomin Cave and Karst System – The karst area, located 366 metres above the McLeod River (1891 metres above sea level) on the southern slopes of Leyland Mountain, has been known since the early 1900s. Cadomin Cave, 2791 metres in length and 220 metres in depth, has one known entrance and is contained in the Palliser Formation. The cave is situated in an area of high subalpine, old growth forest.

Cadomin Cave is particularly significant as a major hibernaculum for bats and is one of four known bat winter hibernacula in Alberta. Four out of seven bat species, which reside in the subalpine region of Alberta, have been found hibernating in the cave – the little brown bat, the long-legged bat, the northern long-eared bat and the long-eared bat. A resident population of approximately 500 observable bats hibernate here each winter, with a possible total population of 1000 hibernating bats (pers. comm. Dave Hobson, 2000); up to 30,000 bats may pass through the cave each fall (Alberta Forestry, Lands and Wildlife, 1990a).

Tripoli Ridge – Tripoli Ridge forms the mountain backbone of the park connecting the Cardinal Divide to Whitehorse Creek. There are significant patterned ground features such as stone polygons and striping formed by frost action. It includes Tripoli, Prospect and Cheviot Mountains and their upper eastern slopes above treeline. The slopes at the foot of these mountains contain extensive alpine meadows. More than 277

plant species have been found in the area, including more than 35 provincially rare or unusual species (Achuff, 1984).

Cardinal River Headwaters – A small portion of the Cardinal River Headwaters falls within the boundaries of Whitehorse Wildland Park. Two small tarns exist in the upper reaches of the headwaters, one located in the Wildland Park. This is a geologically striking area including features such as waterfalls and cascades, with tenacious vegetation clinging to the barren rocks (Achuff, 1984).

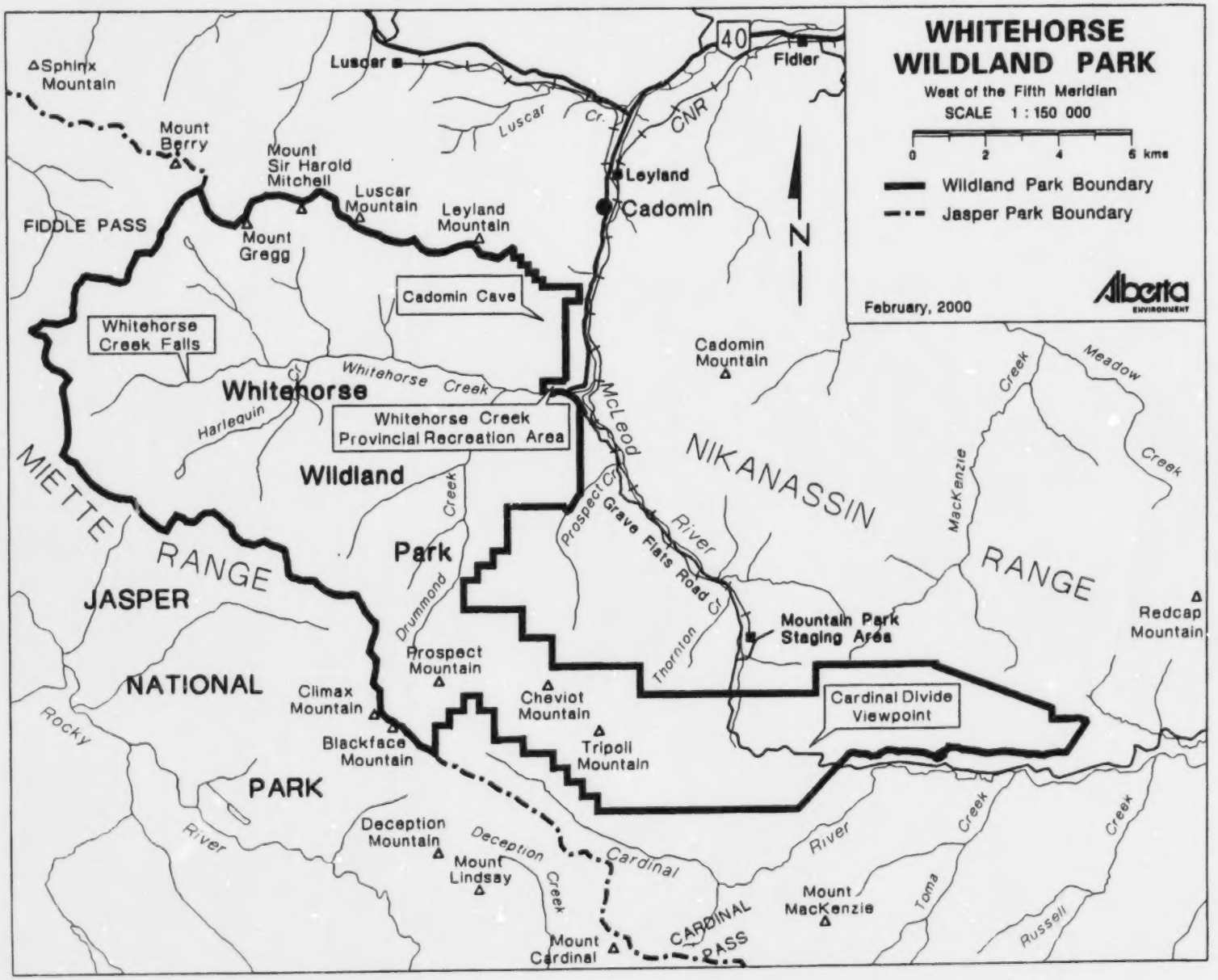


Figure 1. Whitehorse Wildland Park Location Map

1.2 ESTABLISHMENT OF THE WILDLAND PARK

Several planning, policy and legislation documents have guided management in the area of Whitehorse Wildland Park over the years.

The Eastern Slopes Policy: a policy for Resource Management of the Eastern Slopes (approved in 1977 and revised in 1984), provides direction for the management of Alberta's eastern slopes, lands and resources (Government of Alberta, 1977). The policy identified a need to implement resource management through the completion of comprehensive integrated resource plans (IRP) highlighting watershed management as a major objective to be considered in these plans.

As a result of the Eastern Slopes policy, the ***Coal Branch Sub-regional Integrated Resource Plan*** **(IRP)** was completed and approved in August of 1990. The IRP provided a framework for the management and use of public land and resources within the planning area, which stretched from Hinton to Edson along the yellowhead corridor, west to the Jasper National Park boundary and south to the Brazeau River. The area that is now the Wildland Park formed part of the Mountain Park-Folding Mountain Resource Management Area (RMA), and also a small corner of the Nikanassin RMA (Alberta Forestry, Lands and Wildlife, 1990a). The IRP classified the majority of the Wildland Park lands as prime protection and critical wildlife zones. In addition, the plan noted the two candidate Natural Areas – Cadomin Cave[2] and Tripoli Ridge- as having significance for protection. Subsequently, a protective notation was placed on the proposed Tripoli Ridge Natural Area.

[2] In 1987, a request for the placement of a reservation to protect the Cadomin Cave as a Natural Area was made and upon approval adopted status as a Candidate Natural Area.

One of the recommendations resulting from the Coal Branch IRP, was to complete a ***Coal Branch Access Management Plan*** **(AMP)** to manage motorized and non-motorized recreation use on existing access routes on public lands, within the Coal Branch area (Alberta Environmental Protection, 1994a). In June of 1994, the AMP was completed. The AMP recognized and reconciled the conflicts between motorized and non-motorized recreational users, and the need to protect portions of land within the management area. The AMP confirmed establishment of the Cardinal Divide Natural Area, which now included the ridge east of the Grave Flats Road. Both the Coal Branch IRP and AMP documents were subject to extensive public input and review during their development.

The Tripoli Ridge area which included the Cardinal Divide, the Cardinal River Headwaters and Harlequin Creek, was originally proposed for reservation as a Natural Area in 1974, and in 1977, was upgraded to a proposal for an Ecological Reserve. It was not until August 1995, as a result of the AMP recommendations, that the whole Cardinal Divide area was legislated as a Natural Area.

In 1994, the Cheviot Mine Environmental Impact Assessment (EIA) process was initiated, and followed in 1997 with a joint federal/provincial review panel report, which supported protection of the Wildland Park area (EUB-CEAA, 1997). Alberta Environment, Land and Forest Service, proposed to expand the Cardinal Divide Natural Area boundaries to include the lands now designated within the Wildland Park.

In August of 1998, the Whitehorse Wildland Park was designated, which enlarged and reclassified the existing Cardinal Divide Natural Area (16,000 acres/6478 hectares) and the Cadomin Cave Candidate Natural area (Order in Council, 1998). In February of 1999, the management planning process was initiated for the Wildland Park.

1.3 HISTORY OF WILDLAND PARK AREA AND STEWARDSHIP

Stewardship efforts within the Wildland Park area have been ongoing for many years. Organizations such as the Alpine Club of Canada (ACC), Edmonton Section, and the Alberta Native Plant Council (ANPC) have been stewards of the Cardinal Divide and area since about 1991. The Alberta Speleological Society has been the steward organization for the Cadomin Cave since about 1993.

As stewards, the ACC and ANPC make several visits each year to the Wildland Park area. They have compiled lists of plants (particularly alpine species), produced a brochure and run several field trips each year. Members lead the field trips on a volunteer and/or paid basis, to teach the public about the unique flora and fauna of the area. They publish a newsletter, called "The Iris", three times per year and organize an annual workshop.

The ANPC, ACC and Cardinal River Coals have organized August "reclamation weekends" to replant alpine plants where vehicle traffic has destroyed vegetation in this fragile tundra landscape. As of March 2000, over 6000 alpine seedlings have been individually planted. As well, trails have been defined, road edges lined with small rocks to discourage driving onto the ridge and fire rings and trash removed.

The Alberta Speleological Society have played a key role in management of the Cadomin Cave, been responsible for clean-up and graffiti removal trips, preparation of temporary signage along the trail, and maintenance of a registration book at the cave entrance.

The Coal Branch Motorized, is an association of ATV, motorcycle, 4-wheel drive and snowmobile users in the Coal Branch Region. They are the stewards responsible for trail maintenance along the Drummond/Prospect Ridge trail and turnaround point within the park and also for additional areas including the Cardinal River Headwaters area outside the park.

1.4 PURPOSE OF MANAGEMENT PLAN

This management plan will provide direction for the protection and use of Whitehorse Wildland Park for up to ten years from the date of approval. In light of potential, provincial legislative and/or significant land use changes in the Coal Branch area, amendments to the plan may occur. A preliminary review of this management plan will occur in five years. A major review of the management plan will occur not later than 10 years from its date of approval. Specifically, the management plan will:

- describe the Wildland Park;
- place the Wildland Park within the system of protected areas in Alberta and state its natural history themes;
- develop and define zoning for the Wildland Park;
- define objectives and management actions for the Wildland Park;
- outline surrounding land use and cooperation with surrounding land owners and managers; and
- outline implementation of the plan.

1.5 PUBLIC INVOLVEMENT

The preparation of a management plan must include the involvement of those interested in the management of the Wildland Park, such as Wildland Park users, industry, government agencies and the general public.

Public involvement for this plan was as follows:

Stage 1 – In January of 1999, a letter introducing Whitehorse Wildland Park and the initiation of the management planning process was sent to various key stakeholders. The letter invited them to become jointly involved with Alberta Environment to develop a management plan for the Wildland Park. The Whitehorse Wildland Park Advisory Group was established and terms of reference approved.

Stage 2 – The draft management plan was developed in consultation with the Whitehorse Wildland Park Advisory Group.

Stage 3 – Public review of draft management plan occurred between September and the end of November 1999.

Stage 4 – The final management plan was developed in consultation with Whitehorse Wildland Park Advisory Group in March 2000.

Stage 5 – Plan implementation.

(Please see Appendix C for a detailed outline of the Park Management Planning Process.)

2.0 ROLE IN ALBERTA'S NETWORK OF PROTECTED AREAS

2.1 OBJECTIVES

Four broad objectives are the cornerstones of Alberta's network of protected areas. These broad objectives apply to the protected areas system as a whole.

Preservation

To preserve and protect in perpetuity a system of representative, special and outstanding natural landscapes and features as well as landscape-related prehistoric, historic and cultural resources of Alberta.

Heritage Appreciation

To provide opportunities to explore, understand and appreciate the natural, historical and cultural heritage of Alberta, and to enhance public awareness of our natural environment and our relationship to and dependence on it.

Outdoor Recreation

To provide a variety of intensive and dispersed outdoor recreation opportunities and related facilities and services.

Tourism

To encourage residents and visitors to discover and enjoy the natural, historical and cultural resources of the province through a variety of recreation opportunities, facilities and accommodation services.

The specific management goals for Wildland Parks are outlined under Section 5.0 Management Objectives and Actions Required.

Each existing or potential protected area is assessed for its contribution to these objectives. Two tools aid this assessment: first, the natural regions framework which

identifies representative landscape themes of a protected area, and second, the legislative classification of the site.

2.2 NATURAL REGIONS FRAMEWORK

The Alberta government is committed to protecting representative samples of Alberta's natural heritage. To help select which areas are the best samples, a framework based on natural features has been adopted. This framework is a hierarchy of natural regions, subregions and natural history themes.

Natural Regions
↓
Natural Subregions
↓
Level 1 Themes
↓
Level 2 Themes
↓
Level 3 Themes

Natural regions provide the "big picture" of Alberta's landscapes, such as grasslands, mountains and boreal forest. The subregions and natural history themes are subdivisions of the natural regions and provide a more specific picture of smaller areas.

There are six natural regions in Alberta. Differences between these regions are apparent by their distinct landform features and vegetation. The six regions are Boreal Forest, Rocky Mountain, Foothills, Canadian Shield, Parkland and Grassland (See Figure 2. Natural Regions Map).

Each of these natural regions has been divided into subregions based on criteria that vary depending on the Natural Region. For instance, the Rocky Mountain Natural Region has been divided into three subregions based on differences in elevation and the differences in climate and vegetation, which result. The Boreal Forest Natural Region, however, is divided into six subregions based on vegetation, geology and landforms. These subregions vary with the predominant forest cover, topography (level, undulating or hilly) and mix of uplands and wetlands.

Subregions are further divided into Level 1, Level 2 and Level 3 Natural History themes. Level 1 themes are based on easily observed landforms, such as wetlands and valley/ridges.

Level 2 themes are more specific breakdowns of Level 1 themes. They refer to broad vegetation, habitat types or highly visible geological features. Examples of Level 2 themes in the Rocky Mountain subregion are main ranges, timberline/ krummholz and spruce-fir forests.

Level 3 themes are finer breakdowns of Level 2 themes. They include specific features such as rare plants and animals, microhabitat and specific geologic features such as karst topography.

Because of their detail, themes are most useful for identifying the natural diversity within Alberta. Level 1 themes can usually be seen on aerial photographs, where as Level 2 and Level 3 themes require detailed biophysical studies. Analysis of these themes can determine which sites in Alberta would be the best examples of our natural heritage.

Whitehorse Wildland Park falls within the Rocky Mountain Natural Region of Alberta. There are both federal and provincial protected areas within the region, which capture 100 % of the Level 1, 2 and 3 Natural History Themes. WWP is an important complement to the Rocky Mountain protected areas network.

Tables 1 and 2 show the Level 1, Level 2 and Level 3/Special Natural History Themes represented in Whitehorse Wildland Park.

Table 1: Natural History Themes - Subalpine Subregion

WHITEHORSE WILDLAND PARK	
Rocky Mountain Natural Region	
Subalpine Subregion	
Level 1 Natural History Themes	**Level 2 Natural History Themes**
Valley/Ridge Floor/Stream	❑ Morainal ❑ Spruce Forest ❑ Old Growth Forest ❑ Lodgepole Pine Forest ❑ Shrublands ❑ Grassland
Valley/Ridge Ridge/Valley Wall	❑ Front Ranges ❑ Calcareous Bedrock ❑ Colluvial ❑ Morainal ❑ Snow Avalanche Slopes ❑ Timberline/ Krummholz ❑ Lower Subalpine ❑ Upper Subalpine ❑ Spruce-Fir Forest ❑ Old Growth Forest ❑ Lodgepole Pine Forest ❑ Shrublands ❑ Grasslands and Meadows
Special/ Level 3 Natural History Themes	❑ Cadomin Cave ❑ Karst Topography ❑ Rare Plant Species and Communities

Table 2: Natural History Themes - Alpine Subregion

Alpine Subregion	
Level 1 Natural History Themes	**Level 2 Natural History Themes**
Valley/Ridge Floor/Stream	❑ Fluvial ❑ Morainal ❑ Colluvial ❑ Moderate Snowbed Communities ❑ Deep Snowbed Communities ❑ Stream
Valley/Ridge Ridge/Valley Wall	❑ Thrust Fault Mountains ❑ Calcareous Bedrock ❑ Alpine Glaciation ❑ Morainal ❑ Colluvial ❑ Shallow Snowbed Communities ❑ Moderate Snowbed Communities ❑ Deep Snowbed Communities ❑ Moist Meadow
Glacier/Snowfield	❑ Snowfield
Wetland Lake	❑ Lake
Special/Level 3 Natural History Themes	❑ Patterned Ground ❑ Alpine Tundra ❑ Waterfalls ❑ Cascades ❑ Rock Glaciers ❑ Vegetated Rock Glacier ❑ Cirque Moraines ❑ Talus and Scree Slopes ❑ Fossil Beds ❑ Rare Plant Species and Communities

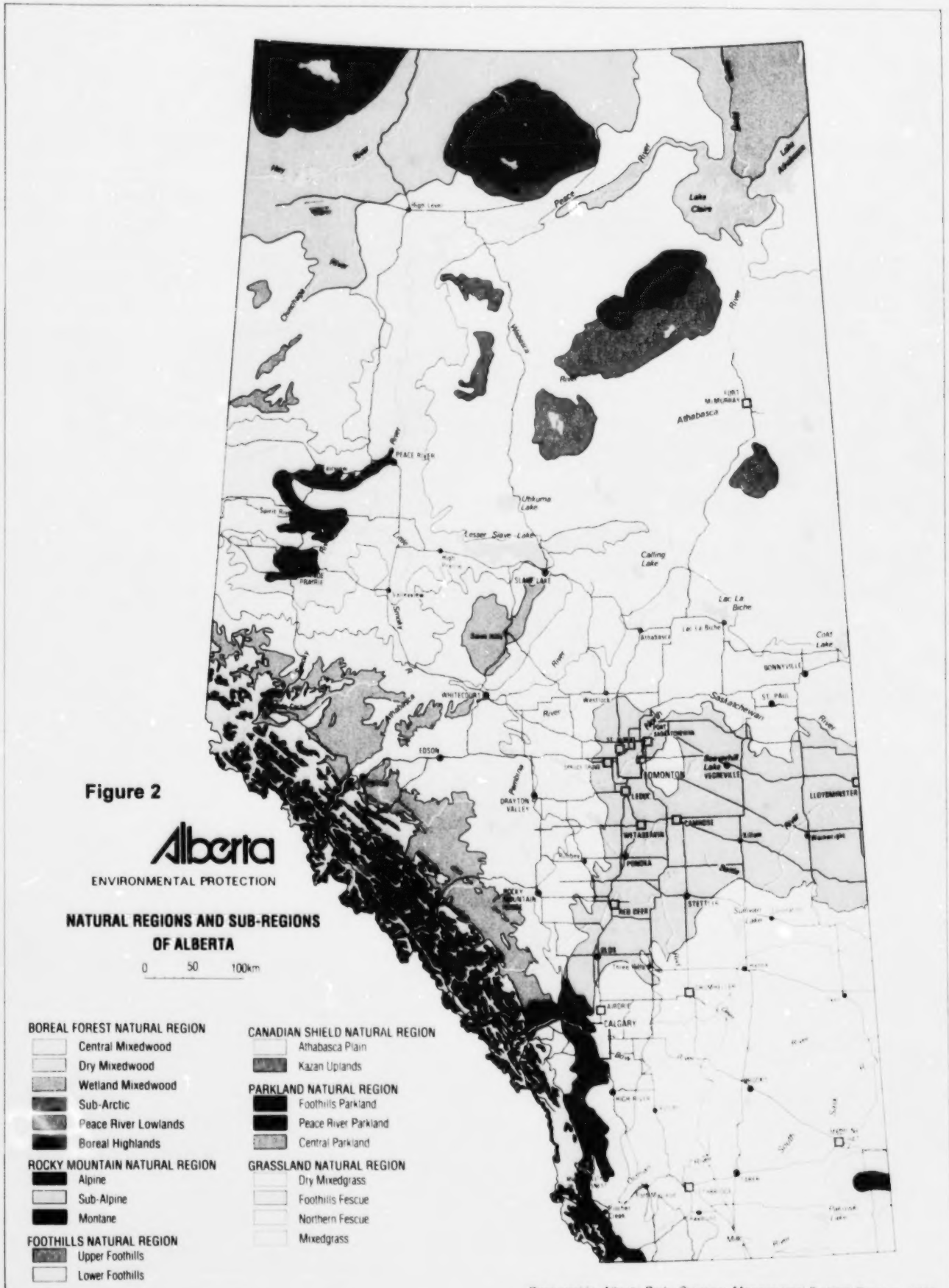


Figure 2
Alberta
ENVIRONMENTAL PROTECTION
NATURAL REGIONS AND SUB-REGIONS OF ALBERTA
0 50 100km
BOREAL FOREST NATURAL REGION
Central Mixedwood
Dry Mixedwood
Wetland Mixedwood
Sub-Arctic
Peace River Lowlands
Boreal Highlands
ROCKY MOUNTAIN NATURAL REGION
Alpine
Sub-Alpine
Montane
FOOTHILLS NATURAL REGION
Upper Foothills
Lower Foothills
CANADIAN SHIELD NATURAL REGION
Athabasca Plain
Kazan Uplands
PARKLAND NATURAL REGION
Foothills Parkland
Peace River Parkland
Central Parkland
GRASSLAND NATURAL REGION
Dry Mixedgrass
Foothills Fescue
Northern Fescue
Mixedgrass
Produced by Alberta Parks Services, Management Support Division, 1994

2.3 CLASSIFICATION AND LEGISLATION

The classifications of protected areas under Alberta legislation are Ecological Reserves, Wilderness Areas, Wilderness Parks, Wildland Parks, Provincial Parks, Natural Areas and Provincial Recreation Areas. These classifications and the corresponding legislation are under review and will be revised in the near future.

These classifications vary in the contributions they make to the provincial objectives. For instance, Ecological Reserves contribute mostly to the preservation objective and Provincial Recreation Areas contribute primarily to the outdoor recreation objective.

A Wildland Park is a relatively new class of protected area. It places greater emphasis on preserving the natural landscape than Provincial Parks and, correspondingly, a lesser emphasis on facility-oriented outdoor recreation. Balancing the preservation of the ecological integrity of natural landscapes and ecological processes, along with associated biological diversity, while providing opportunities for backcountry recreation, is reflected in the class specific goals for Wildland Parks.

Wildland Parks are currently established under the *Provincial Parks Act*. This act mandates Provincial Parks to be developed and maintained for:

a) the conservation and management of flora and fauna;
b) the preservation of specified areas and objects therein that are of geological, cultural, ecological, or other scientific interest; and
c) to facilitate their use and enjoyment for outdoor recreation.

(RSA 1980 cP-22 s3)

The *Provincial Parks Act* was amended in 1996 to accommodate the differences in management between Provincial Parks and Wildland Parks. The amendments are:

- hunting is allowed in Wildland Parks;
- random camping and associated open fires, are allowed in Wildland Parks;
- no new dispositions will be granted in Wildland parks (as per the Dispositions Regulations in the *Provincial Parks Act*); and
- existing dispositions will be honoured in Wildland Parks (Surface access for existing sub-surface industrial dispositions may be considered).

2.4 CONTRIBUTION OF THE WILDLAND PARK TO PROVINCIAL OBJECTIVES

Whitehorse Wildland Park contributes to all four provincial objectives.

Contributions to the Preservation Objective

- Protects 47 Level 2 Natural History Themes of the alpine and subalpine subregions. At least ten of these themes are present in significant numbers or cover a large area.
- Protects an extremely wide diversity of vegetation, including more than 277 plant species (Achuff, 1984). 108 of these species are considered rare or disjunct within the Whitehorse Wildland Park area (ANHIC, 1999).
- Protects special terrain features (Taylor and Knapik, 1995) such as patterned ground, cirque moraines, rock glaciers and the Cardinal Divide.
- Protects special karst topography, specifically the Cadomin Cave.
- Protects essential wildlife habitat and corridors, particularly for grizzly bears, and other carnivores and ungulates.

Contributions to the Heritage Appreciation Objective

- Offers visitors the opportunity to explore and appreciate the rich natural and cultural heritage found in the Wildland Park.
- Offers significant potential for scientific research and educational opportunities.

Contributions to the Outdoor Recreation Objective

- Provides opportunities for commercial and recreational equestrian trail riding, cycling and hiking on an existing trail system.
- Provides opportunities for other backcountry recreation such as random camping, hunting and fishing in the summer and some snowshoeing and cross-country skiing in the winter.
- Allows OHV (off-highway vehicle users) access to the Drummond/Prospect Ridge designated turn-around point.

Contributions to the Tourism Objective

- Supports local commercial equestrian trail riding and outfitting operations.
- Provides opportunities for nature-based backcountry experiences.

2.5 GUIDING PRINCIPLES

The guiding principles for the management of Whitehorse Wildland Park were compiled from a number of resources (Hendee et. al, 1990; CEAC, 1991; Noss, 1995). They are based on wilderness and ecosystem-based management principles.

1. Ecosystem-based management attempts to care for the land in a responsible way that will sustain its ecosystem. In order to do this, all components of the ecosystem must be considered, including the natural landscape, ecological processes, physical and biological components, and human activities.

2. Ecosystem-based management means taking a long-term view instead of managing just for today. Whitehorse Wildland Park will be managed so its wildland character will be sustained for the future. However, this is a challenging responsibility because little is known about the complex dynamics of a natural system and how changes in one component affect other components. The key is to adapt management practices as one learns more about the natural and social conditions in a protected area.

3. The focus of this Wildland Park will be on allowing natural processes to operate as freely as possible, and on managing human use of the area to keep interference with natural processes to a minimum.

4. A protected area will not survive as an intact ecosystem without the support of the users, the stakeholders and the local community. Alberta Environment will take the lead in seeking the involvement of these people and soliciting their support for Wildland Park objectives.

5. Wildland Parks do not exist in a vacuum. What goes on outside a Wildland Park can have an impact inside the Wildland Park. Conversely, designation of a protected area can affect the management of adjacent land. Wildland Park managers and adjacent land managers need to work together in order to reach the objectives of both areas.

3.0 OVERVIEW OF WILDLAND PARK

3.1 REGIONAL SETTING AND ACCESS

Whitehorse Wildland Park lies within the Coal Branch area in west central Alberta (Bentz et. al, 1986), approximately 60 km south of Hinton. The Coal Branch region has a strong resource based economy comprised of mining, forestry, oil and gas, agriculture, recreation, and tourism. The towns of Hinton and Edson are the main commercial centres, offering a variety of services and opportunities within the community and for recreation users alike.

The "L" shaped Whitehorse Wildland Park shares its western boundary with Jasper National Park. The northern boundary runs along the summits of Mount Gregg, Luscar and Leyland Mountains, with its easternmost corner lying approximately 1.5 km south of the Hamlet of Cadomin, near the Grave Flats Road. The lower portion of the eastern Wildland Park boundary runs south-west skirting Prospect Creek, then heads east encompassing the Cardinal Divide and west to Prospect, Cheviot and Tripoli Mountains. The south-west corner of the Wildland Park lies just south of Prospect Mountain, in the area of the Cardinal River Headwaters. The Coal Branch Forest Land Use Zone defines motorized and non-motorized access in the Mountain Park area. It serves to buffer the Wildland Park along its north, east and southern boundaries (Order in Council, 1999). The proposed Cheviot mine area lies adjacent to the east side of the park.

Vehicle access into the Wildland Park is 54 km south along Hwy # 40 from Hinton to the Cadomin junction, or 69 km south on Hwy # 47 from Edson past Robb, then south on Hwy # 40, 30 km, to the Cadomin junction. After going south through the Hamlet of Cadomin, travel 5.6 km further to the Whitehorse Creek Provincial Recreation Area, a campsite at the entrance to the Wildland Park. The Wildland Park can also be reached by leaving Hwy # 11 from Nordegg and travelling north along the Forestry Trunk Road, connecting to Hwy # 40. A rough unimproved municipal road, the "Grave Flats Road", goes from Whitehorse Creek, south over the Cardinal Divide to the Brazeau River on the Forestry Trunk Road.

The most common, non-motorized access points are from theWhitehorse Creek Provincial Recreation Area and lower Prospect Creek from the Grave Flats Road. Access to the Cardinal Divide area from the viewpoint parking lot and to the Cadomin Cave is by foot only. In addition, popular foot and horse trails lead from the Wildland Park into Jasper National Park over Fiddle Pass, also known as Miette or Whitehorse Pass, and to the south, Cardinal Pass, also known as Rocky Pass.

The only motorized (off-highway vehicle) access into the Wildland Park is off the Grave Flats Road, west from the Mountain Park staging area, up to the Drummond/ Prospect Ridge turnaround point (See Figure 3. Zoning Map).

3.2 DESCRIPTION OF WILDLAND PARK

Whitehorse Wildland Park lies within the northern front ranges of the Rocky Mountain Natural Region of Alberta (Achuff, 1994). This area is composed of rugged, sharply peaked, northwesterly trending ranges and valleys made up of a succession of overthrust sheets lying between southwesterly dipping faults.

The alpine and subalpine terrain of the Wildland Park is variable and rugged, ranging from steep slopes to high alpine meadows to barren mountain peaks. Elevation in the Wildland Park ranges from 1600 to 2800 metres and local relief can be as high as 800 metres (Robertson et. al, 1984). The Whitehorse creek valley bottom, located at 1820 metres above sea level, is in sharp contrast to Mount Gregg, which reaches an elevation of over 2682 metres.

3.2.1 Geology/Surficial Deposits

The bedrock of the area is mostly of early Mesozoic (65 to 235 million years before present) and Paleozoic era (235 to 570 million years before present). The early Mesozoic strata are sandstones, shales, limestones and dolomites (Whitehorse and Sulphur Mountain Formations). The Late Jurassic, Early Cretaceous Nikanassin Formation, laid down during the Mesozoic era, underlies the largest, most northerly area of the Wildland Park and is made up of bedded sandstone, shales and coal shale of marine and non-marine origin (Kilby, 1978). Lower Cretaceous bedrock of the Cadomin,

Luscar and Mountain Park formations is present as a continuous belt along the east side of the Nikanassin Range. These formations are made up of sandstones, shales, conglomerates and coal (Bentz et. al., 1986).

Landscape features in the park have been dominantly influenced by the last ice age, up to about 10,000 years before present. Therefore, sculptured glacial features such as horns, cirques and u-shaped valleys are prominent. Most rock surfaces of the high mountains are bare, but lower slopes may be thinly covered with colluvial material. Thick morainal deposits are present in the glacially carved valley bottoms (Bentz et. al., 1986).

The major postglacial surficial deposits are organic, eolian, fluvial and colluvial materials. Colluvial deposits consist mainly of soil creep material, derived from mixed weathered bedrock and till.

3.2.2 Soils

Differences in parent material, biota, vegetation, relief, climate and time affect soil development. The steep slopes, thin parent material, severe climate and sparse vegetation within Whitehorse Wildland Park all serve to restrict soil development. Brunisols and Regosols are the dominant soils found in the park. Regosols can be found on cold alpine meadows and steep mountain slopes, as well as on riverbanks, fluvial terraces and floodplains (Bentz et. al., 1986).

Brunisols typically occur on more stable, moderately well drained to imperfectly drained sites. In the subalpine areas, brunisols are generally associated with lodgepole pine/successional Engelmann spruce-subalpine fir stands. In the alpine, brunisolic soils are associated with heather, mountain heather, bog-sedge and fescue communities (Strong and Leggat, 1992).

Much of the alpine region is characterized by either rock outcrops or very thin layers of material over bedrock. These areas would not be classified as having a soil (Achuff, 1994).

3.2.3 Climate

The climate of Whitehorse Wildland Park and area can be described as a continental subhumid climate. Summers are short and cool, winters are long and cold and modified by short periods of chinook conditions (Bentz et. al., 1986).

Below freezing temperatures and snow can occur in all months. The frost-free period in the subalpine subregion is likely less than 30 days and there is essentially no frost-free period in the alpine. Annual precipitation averages range from 500 to 750 mm in the Coal Branch region. Summer rainfall (May to September) accounts for over 60 percent of the total yearly precipitation, although snow has been recorded in all months, for elevations above 1400 meters above sea level. Winter precipitation (October to April) ranges from 145 mm to over 269 mm water equivalent. This is typical of the foothills and eastern slopes throughout Alberta. Snowfall amounts generally increase from northeast to southwest due to upslope conditions (Bentz et. al., 1986).

3.2.4 Water and Watershed

The Wildland Park is drained by the Athabasca and the North Saskatchewan River systems. Over 95 percent of the Wildland Park drains to the north along the McLeod-Athabasca Rivers which are part of the Arctic Ocean drainage. Only a small portion of the Wildland Park, south of the Cardinal Divide and Prospect Mountain, drains into the Cardinal River, which flows into the Brazeau-North Saskatchewan River system and eventually into Hudson's Bay (Achuff, 1984).

Whitehorse Creek, with its associated Harlequin and Drummond tributaries, is the

major tributary creek draining into the McLeod River. The waters draining from the Cardinal Divide/Tripoli area are the true headwaters of the McLeod. These streams have high gradients, low drainage density and high runoff efficiency, resulting in a quick initial response to storms. Stream channels have low banks and coarse, gravely beds. Slope steepness would generally be a concern, however, because the soils are generally shallow, coarse and often calcareous, erosion and water quality concerns are minor.

3.2.5 Vegetation

One of the most important characteristics of the Whitehorse Wildland Park is the very extensive and rich diversity of alpine and subalpine species, which is unequalled in the province. More than 277 plant species have been found. 108 of these species are considered rare or disjunct within the Whitehorse Wildland Park area (ANHIC, 1999). (See Appendix A for a vegetation species list).

For example, all 14 species of saxifrage, which occur in Alberta north of Waterton, are found in this one area. Some species such as *Saxifraga flagellaris* (Spider Saxifrage) are found in the Prospect Creek area due to the more calcareous soil found there. Other species such as *Pedicularis lanata* (Wooly lousewart) are provincially rare but locally common and have viable populations within the park. There are also a number of species with disjunct distributions, such as *Polemonium viscosum* (Skunkweed) or *Smelowskia calycina* (Silver Rock Cress), which are more commonly found in southern Alberta.

Rare mosses, such as the nationally rare *Mielichhoferia macrocarpa*, have also been found in the park.

Lichen species have not been studied, but would be of particular interest for future study in the Cardinal Divide area.

It has been suggested that one reason for the wide diversity of species and their disjunct distribution is due to their persistence in a glacial refugium. It has been hypothesized that the rocky mountains in the vicinity of Mountain Park, specifically the Cardinal Divide, was ice-free during the Wisconsinan glaciation (> 35,000 years BP) (Packer and Vitt, 1974). This hypothesis was based on a combination of botanical and geomorphic data, including the occurrence of disjunct populations of nonvascular species along the Cardinal Divide.

Recent research suggests that most of the Mountain Park area was glaciated during the Wisconsinan, except possibly at high elevations (>2075-2255 m above sea level) (Strong, 1999). The east Cardinal Divide lies between 2120-2200 meters and therefore could have remained ice-free. The debate on the validity of this theory continues.

Whitehorse Wildland Park includes two of the three subregions found within the Rocky Mountain Natural Region of Alberta (Alberta Environmental Protection, 1994b). The alpine subregion includes all areas above treeline including vegetated areas, rockland, snowfield and glaciers. The subalpine subregion occurs below the alpine subregion. Morainal materials occupy much of the subalpine with colluvial and residual bedrock materials frequent at higher elevations. Fluvial and glaciofluvial deposits are common along stream valleys, with lesser amounts of glaciolacustrine and aeolian materials (Achuff, 1994).

In alpine areas, the vegetation varies depending on a number of factors including type of substrate, exposure to winds and insolation, slope steepness, moisture conditions and snow accumulation. Tree growth is restricted to scattered, stunted subalpine fir and Engelmann spruce, which occur at lower elevations in depressional and less-exposed sites.

Heather communities are the dominant ground cover on gently sloped north aspects often associated with stunted tree growth. Alpine areas contain a number of rare plant species, unique vegetation types and areas of sensitive tundra, which are unique to the province.

The subalpine is often divided into two portions – a lower subalpine characterized by closed forests of lodgepole pine, Engelmann spruce and subalpine fir, and an upper subalpine with spruce-fir closed forests and open forests near treeline. The spruce at lower elevations is often an introgressive hybrid between white spruce and Engelmann spruce. At higher elevations, pure Engelmann spruce is characteristic. Engelmann spruce-subalpine fir forests typically occur on higher, moister sites that have not been subject to fire as have the lodgepole pine forests (Achuff, 1994).

3.2.6 Wildlife

The large ungulates that are found in Whitehorse Wildland Park are bighorn sheep, mountain goat, elk, moose, mule deer and white-tailed deer. Bighorn sheep using the Wildland Park are from a population inhabiting Redcap/Nikanissan Ranges and Jasper National Park. This large population is estimated at 1000 animals, with 300 individuals found within the Wildland Park at certain times of year (pers. comm. Jeff Kneteman, 1999).

Mountain goat, white-tailed deer, mule deer and elk populations within the Wildland Park are relatively low. Exposed west and south-facing slopes and watercourses are considered critical for maintenance of ungulates within the Wildland Park. Regular surveys have shown elk numbers to be consistently low in the area as compared to other areas within the eastern slopes, which show an increase. A transplant of 35 elk into the Prospect Creek area in 1985 did not seem to produce a long-term increase.

Grizzly bears and wolverines, which are blue listed within the Alberta Status of Wildlife Evaluation System (Alberta Environment, 1999) and listed as vulnerable by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC, 1999), are present in the Wildland Park. Wolves and cougar are also present in the Whitehorse Park area, however, like most carnivores (including wolverines), are rarely seen.

No recent studies have been conducted on wolf densities in the area, however, in 1985, Schmidt and Gunson documented that at least one wolf pack included the park within its winter ranges. In wolf studies conducted in Alberta, mean winter pack size generally ranges from 5-7 animals (Paquet, 1993).

Although cougars do occur throughout the region year-round, cougar densities are not known but are probably $< 1/100\ km^2$. Cougar movement corridors between Mountain Park, through Whitehorse Wildland Park, to Jasper National Park are inhibited by rugged and open terrain of the Continental Range, except through Fiddle and Rocky Passes. Whether or not cougars reside in the Mountain Park and Whitehorse Wildland Park areas likely depends on weather severity from year to year (Jalkotzy and Ross, 1991).

The subalpine and alpine subregions contain many small, isolated habitat niches providing food, water and cover requirements specific to a number of avifauna species. Studies in the region, particularly the Cadomin/Cardinal Divide areas have recorded about 128 bird species, of which 70 have been recorded breeding, while about 23 were permanent residents and 17 were rare or accidental (transient/migrant) (Salt, 1985).

Some of the species unique to these alpine/ subalpine areas are the mountain bluebird, horned lark, american dipper, townsends solitaire, varied thrush, townsend's warbler, golden-crowned sparrow and american pipit

(Salt, 1985). (See Appendix B for wildlife species list resources for the Wildland Park area).

The harlequin duck is a unique species found within the Whitehorse Wildland Park area. They are currently on the Yellow List of Alberta's Wildlife Status Evaluation System because of concern expressed over long-term declines in their numbers (Alberta Environment, 1999). This decline in numbers is thought to result from one or a combination of factors including naturally low populations, limited provincial distributions, or demographic/life history features that make them vulnerable to human-related changes (Alberta Environment, 1999). For these reasons, the harlequin duck may require special management and merit extra attention (pers. comm. Jeff Kneteman, 1999).

The Cadomin Cave is valuable habitat for bats. Four bat species have been found hibernating in the cave; the little brown bat, the long-legged bat, the northern long-eared bat and the long-eared bat (Alberta Forestry, Lands and Wildlife, 1990). Over the last ten years (1989-90 to 1998-99), the average number of bats counted during the annual Cadomin Cave bat count has been 523 (range 385 to 681). However, this must be considered a conservative number as it does not take into account the bats in the lower gallery, or in areas that couldn't be reached. It is estimated that there could be as high as 1000 bats overwintering within the cave (pers. comm. Dave Hobson, 2000).

There is also a wide diversity of invertebrate species within the park area, particularly butterflies. Prospect Mountain contains a wide variety of alpine habitats, which support many rare butterfly species with unique ecology (Ted Pike, unpublished, 1996). These species require habitats such as rockslide areas and scree slopes. The Dingy Arctic Fritillary, *Boloria improba*, for example, only flies on even numbered years. Eggs are not laid every year, and so adults are not present every year. For these reasons, this population is sensitive to disturbance, especially to their larval food plant, Arctic Willow.

3.2.7 Fisheries

Streams in the Wildland Park have a natural low biological productivity because of a short ice-free period (mid-May to mid-October), low nutrient levels and variable flows. Further limitations to production are imposed in the Whitehorse Creek watershed because of poor over wintering conditions in the upper watershed and isolation (falls and chutes) of the upper watershed from wintering habitat in the lower watershed. Rainbow trout have been introduced to Whitehorse Creek above the uppermost falls (located approximately 8 km above the confluence of the McLeod River). Overall, recreational fishing within the Wildland Park remains limited (pers. comm. George Sterling, 1999).

Hildebrandt (1988) reported the presence of mountain whitefish, rainbow trout and bull trout in lower Whitehorse Creek. Angling opportunities range from moderate to good for mountain whitefish, rainbow trout, bull trout and brook trout in the main stem of the McLeod River and the main stem of Whitehorse Creek below the lowermost falls (located approximately 2 km above the confluence of the McLeod River).

3.2.8 Historical and Cultural Resources

Aboriginal people of the Cree, Nakota (Stoney) and Saulteaux Nations have long-standing linkages to the Whitehorse Wildland Park area. Historically, this area was part of a north-south transportation corridor along the Rocky Mountains and used for plant gathering, hunting and trapping since precontact times.

Several small prehistoric sites have been identified within the park, with the Whitehorse Creek rock shelter being one of the most significant (Brink, 1973). It consists of the remains of consecutive small-

scale occupations (hearths, stone artifacts, bone fragments) dating back more than 3700 years and is well separated within soil profiles 45 cm in depth (Alberta Forestry, Lands and Wildlife, 1990a).

For a detailed assessment of the archaeological sites and historical account within and around the Whitehorse Wildland Park area, see the Cheviot Mine Project Application (Cardinal River Coals, 1996).

The Alberta Coal Branch region, an area including Luscar and the McLeod River south to Mountain Park, has a long history centered around coal mining (Ross, 1974). Because of this mineral resource, human settlement in the area grew, flourished and died in the space of a few decades.

Coal mining first started in 1911, when coal was required as a fuel for steam locomotives. The coal was extracted using conventional underground methods. Surface mining was introduced in the 1940s and production peaked as a result of World War II and the post-war boom. Operations ceased when the railway locomotives switched to diesel fuel. In April 1949, the underground mine at Mountain Park was closed. On June 30, 1950, the strip mine also closed and Mountain Park that had reached a population of 1500 residents, became a ghost mine and town. From 1911 to 1950, 6,427,236 tonnes of coal had been mined. Two obvious reminders from the past are the cemetery and the railway (Salzsauler and Wegert, 1999).

Today, mining is once again active in the area and employs a large proportion of the nearby population. There are two coal mines, Cardinal River Coals and the Gregg River Mine, and a limestone quarry belonging to Inland Cement Ltd. in direct proximity of the Wildland Park.

For further in-depth history on mining and the Coal Branch and Mountain Park areas, please see "Oh, The Coal Branch", 1974, by Toni Ross; " Mountain Park Memories", 1999, by Mary Lee Salzsauler and Joan P Talbot Wegert; and "Luscar Story", 1985, by Allen Maydonik.

There has been a long history of memorial ceremonies, which include ash scattering along the Cardinal Divide. The practice of scattering the ashes of deceased loved ones and erecting small rock cairns in their memory has been carried out by both residents and non-residents of the Coal Branch area. For these reasons, the Cardinal Divide has spiritual value for many people.

3.2.9 Recreation

The Wildland Park lies within an area attractive to a large number of recreation users due to its natural features such as the Whitehorse Creek Valley, Cardinal Divide, Prospect Creek and Cadomin Cave, all of which are accessible from the Grave Flats Road. Specific sites therein have traditionally been popular locations for a variety of outdoor recreation activities including designated and random camping, hiking, off-highway vehicle use (particularly in the adjacent Mountain Park area, outside the Wildland Park), hunting and fishing, caving, mountain biking, cross-country skiing, snowshoeing, sightseeing, nature appreciation and horseback riding.

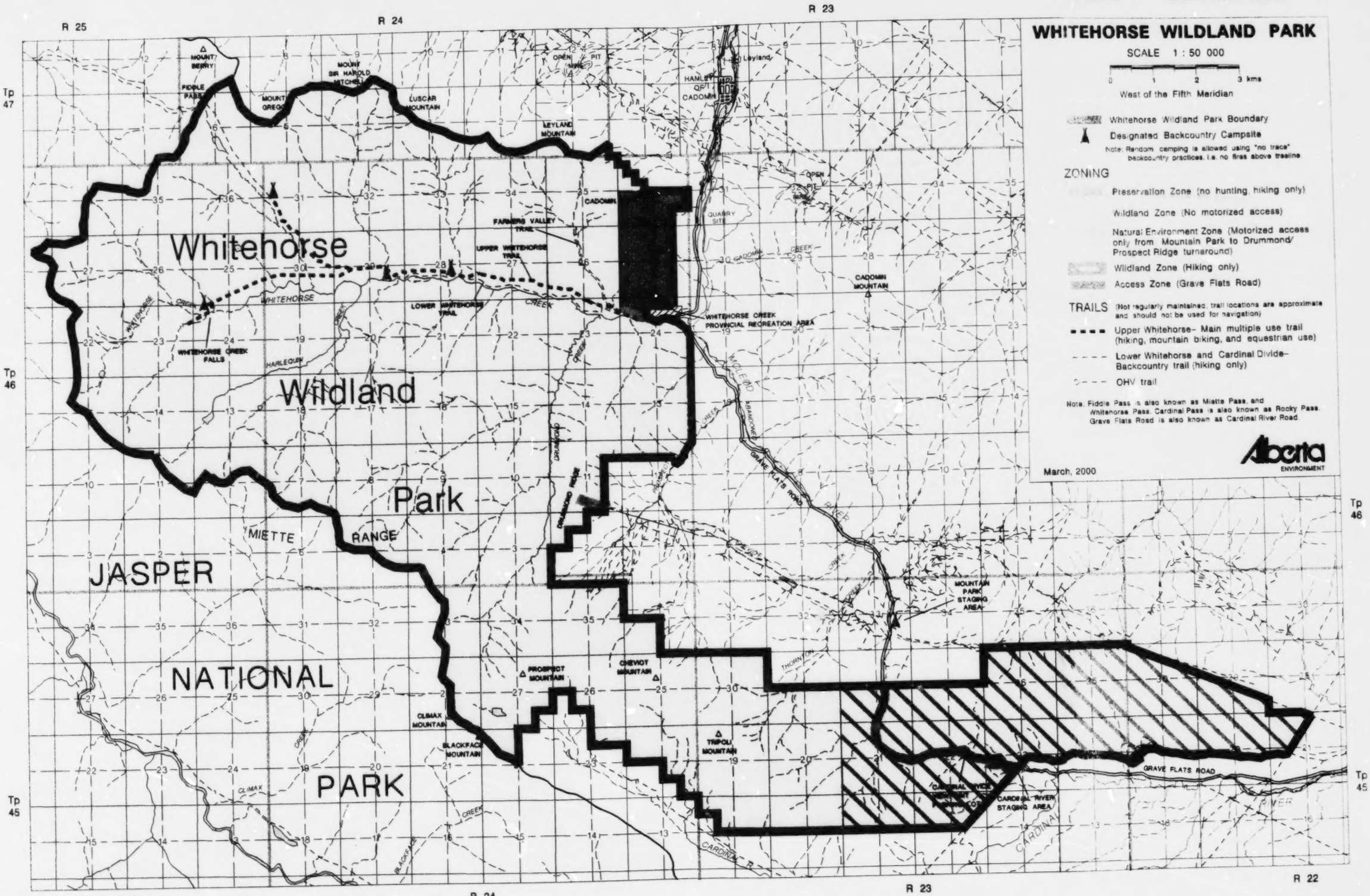
The Whitehorse Creek valley receives a high level of equestrian, camping and hiking activity, with staging at the Whitehorse Creek Provincial Recreation Area. Cross-country skiing in the area is limited to Whitehorse and Prospect Creek as snow conditions south towards the Cardinal Divide are not ideal. It is 10 km along the main upper Whitehorse Creek trail, along the Whitehorse Creek valley from the Provincial Recreation Area, to Whitehorse Creek Falls, and 14 km to Fiddle Pass at the border of Jasper National Park.

The Cardinal Divide ridge area in particular, is a popular hiking and sightseeing destination, as there is easy road access to the alpine zone. There are pleasant hikes

along the east and west divide ridges that provide magnificent views.

The Whitehorse Creek Provincial Recreation Area is the only formal campground and horse-holding facility for both day visitors and overnight visitors close to the Wildland Park. The Watson Creek Provincial Recreation Area, located 7 km north of Cadomin, and other camping sites outside the park, are frequently used by visitors to the park.

FIGURE 3 ZONING MAP



WHITEHORSE WILDLAND PARK

SCALE 1 : 50 000

0 1 2 3 kms

West of the Fifth Meridian

Whitehorse Wildland Park Boundary

Designated Backcountry Campsite

Note: Random camping is allowed using "no trace" backcountry practices, i.e. no fires above treeline

ZONING

- Preservation Zone (no hunting, hiking only)
- Wildland Zone (No motorized access)
- Natural Environment Zone (Motorized access only from Mountain Park to Drummond/ Prospect Ridge turnaround)
- Wildland Zone (Hiking only)
- Access Zone (Grave Flats Road)

TRAILS (Not regularly maintained, trail locations are approximate and should not be used for navigation)

- Upper Whitehorse– Main multiple use trail (hiking, mountain biking, and equestrian use)
- Lower Whitehorse and Cardinal Divide– Backcountry trail (hiking only)
- OHV trail

Note: Fiddle Pass is also known as Miette Pass, and Whitehorse Pass. Cardinal Pass is also known as Rocky Pass. Grave Flats Road is also known as Cardinal River Road.

Alberta ENVIRONMENT

March, 2000

4.0 WILDLAND PARK ZONING

Alberta Environment uses a zoning system as an essential tool for the planning, development and effective management of Alberta's protected areas. The system allows managers to divide sites into different zones according to the following factors:

- location of natural and cultural heritage features;
- sensitivity and protection needs of heritage features;
- management objectives and priorities for the site;
- support facilities' requirements to accommodate visitor needs; and
- suitability of the landscape to accommodate particular types and levels of activity/use including the provision of heritage appreciation and outdoor recreation opportunities.

Whitehorse Wildland Park is divided into four zones – Preservation Zone, Wildland Zone, Natural Environment Zone and Access Zone. The intents of the four zones are described in the following sections.

(Please refer to Figure 3. Zoning Map.)

4.1 PRESERVATION ZONE

The intent of the preservation zone is to protect land that contains unique natural features or objects of geological, ethnological, historical, anthropological, archaeological, paleontological, cultural or scientific importance that are of such significance as to require special protection, beyond the protection provided as a result of the area designation.

The karst and Cadomin Cave features within Whitehorse Wildland Park are provincially significant and therefore warrant designation as a preservation zone. Upon completion of the karst management strategy, the boundaries of the Cadomin Cave system will be defined. The zone will be managed to allow activities appropriate within a wildland experience. No camping or fires will be allowed within the Cadomin Cave preservation zone. Motorized activity, horse use and hunting will not be allowed. Access to this area will be by foot only.

4.2 WILDLAND ZONE

This zone will be the general zoning for most of the Wildland Park. The intent of this zone is to protect and maintain the area's natural state. Motorized activity will not be allowed. Development is limited to primitive backcountry facilities appropriate to a wildland experience. Some recreational activities may be managed to reduce impacts on sites with ecological sensitivity (e.g., the Cardinal Divide).

The Cardinal Divide will be accessed by foot only (i.e., no horses, bikes or ATVs). The area includes Township 45, Ranges 22 and 23, sections 16 (NE & NW), 21 (all) and 28 (SW & SE) to the east edge of the Divide.

The Upper Whitehorse Creek Trail (main, northernmost trail) will be a multiple use trail. Hiking, horseback riding and mountain biking are allowed along this trail from the Whitehorse Creek Provincial Recreation Area towards Whitehorse Falls. Mountain biking is not recommended past the point where the Whitehorse trail forks north towards Fiddle Pass. The terrain becomes quite rough and is not suitable for mountain biking.

The Lower Whitehorse Creek Trail, which is about 6 km long, is suggested for day use hiking only.

4.3 NATURAL ENVIRONMENT ZONE

This zone would be applied in areas currently being used as staging areas for foot and horse traffic into the backcountry. Under the auspices of maintaining and

protecting the natural environment, certain facilities will be provided to ensure a variety of outdoor and heritage appreciation opportunities can be delivered.

The only motorized access (off-highway vehicle) into the Wildland Park is off the Grave Flats Road, west from the Mountain Park staging area, up to the Drummond/ Prospect Ridge turnaround point but not along the ridge. There is no OHV access from lower Prospect Creek/Grave Flats Road. The Drummond Ridge itself falls under the Wildland Zone designation.

4.4 ACCESS ZONE

This zone would be applied to the Grave Flats Road, the major access route through the Wildland Park. Parking will be restricted to designated areas (i.e., Cardinal Divide parking lot). Vehicle access will be restricted to the main access routes only.

Unloading of horses is provided for at a staging area in Whitehorse Creek Provincial Recreation Area.

5.0 MANAGEMENT OBJECTIVES AND ACTIONS REQUIRED

The overall intent of Whitehorse Wildland Park is to ensure that the health and biodiversity of the ecosystem is maintained, by allowing only low-impact activities compatible with long-term conservation.

The primary objective of management is to ensure the preservation and protection of natural heritage, while providing opportunities for backcountry recreation and the experiencing of nature in an undisturbed state.

For the most part, natural processes in the Wildland Park will continue without management interference. The exception to non-interference is suppression of fires and management of diseases and pests, which prove threatening to adjacent forests and recreational values inside the Wildland Park. Hunting, fishing and trapping are also human interventions and will be managed in the Wildland Park on a sustainable basis.

Since the natural environment of the Wildland Park is mostly self-maintaining, the focus of management will be on control of human use and its impacts on the Wildland Park environment. Management guidelines are to ensure that these impacts do not go beyond sustainable levels.

The following sections outline objectives and actions required, to achieve the management objectives for the Wildland Park, in accordance with the four program goals of preservation, heritage appreciation, outdoor recreation and tourism.

5.1 PRESERVATION

Alberta Environment uses the following preservation goal for Wildland Parks.

"*To preserve and protect significant wildland landscapes and associated ecological processes and biological diversity.*"

ECOLOGICAL RESOURCE MANAGEMENT

5.1.1 Systems Related

Objectives:

1. To manage Whitehorse Wildland Park (WWP) as a benchmark and functioning subsystem of the larger alpine and subalpine subsystems in the overall Rocky Mountain Natural History classification.
2. To preserve representative, unique, rare and endangered plant and animal species communities and gene pools found in WWP.
3. To gain a thorough understanding of the resources and their function and

significance within the present ecosystem(s).

Actions:

- Complete inventories and research activities of all areas and associated features within the Wildland Park.

5.1.2 Geology/Soils

Alpine soils and ground patterns are extremely sensitive to erosion. Regeneration is a very slow process, therefore human disturbance in these areas must be kept to a minimum.

Objectives:

1. To ensure that soil erosion from human activity does not exceed established erosion standards.
2. To prevent unlawful removal of geological specimens and natural materials (i.e., formations in Cadomin Cave, or blocks of Nikanassin Formation figured sandstone).

Actions:

- Establish human-caused erosion standards beyond which reclamation will be initiated.
- Trails will be monitored for deterioration and hardened-off, re-routed, or reclaimed when necessary. Wildland Park users will be solicited to assist in trail monitoring.
- Features that become eroded from use (e.g., streambanks and wetland areas) will be monitored and appropriate steps taken to mitigate the damage.
- The park will be carefully monitored to detect theft of geological items and natural materials, with emphasis on the high profile Cadomin Cave and Cardinal Divide areas.

5.1.3 Vegetation

Objectives:

1. To protect significant vegetative features.
2. To allow the forest to follow natural succession (e.g., wildfire, diseases) except where it threatens public safety or adjacent lands.
3. To prevent exotic (non-native) species, noxious and restricted weeds from becoming established in WWP.
4. To encourage public appreciation of alpine and subalpine vegetation values and their susceptibility to erosion.
5. To encourage low-impact scientific studies.
6. To minimize disturbance to natural plant communities.
7. To work cooperatively with adjacent stakeholders and landowners in developing a vegetation management plan to address fires, disease and insect outbreaks in connected protected areas.

Actions:

- Identify significant vegetative features within the park.
- Reclaim areas where human use and activity has caused disturbance.
- Collect baseline data and improve the knowledge of the Wildland Park's vegetation (e.g., research into the distribution of mosses and lower orders of vegetation, such as lichens, which are indicators of air pollution).
- Control through education and legislation, the picking of vegetation or seed collection, unless authorized by special permit or for research purposes.
- Assess existing use patterns and associated impacts and where necessary, redistribute activities to appropriate areas.
- Monitor entrance staging and camping areas that can be sensitive to trampling and develop strategies to manage and minimize impacts.
- Develop a long-term vegetation management strategy including reclamation for the Wildland Park, with specific consideration of the significance of the Cardinal Divide plant communities.

- Develop a fire management strategy for the park. (Until the fire management strategy is prepared, all fires will receive initial action by Land and Forest Service, Alberta Environment. After this initial action, fires may be assessed for further action. Those fires that do not threaten visitors, adjacent lands and Wildland Park facilities may be allowed to burn out).
- Develop a disease and insect outbreak plan; this includes an assessment of threats to wildlife habitat, rare plant communities and adjacent lands, while recognizing that insects and their natural predators are part of maintaining the biodiversity and resilience of the ecosystem.
- Develop a public education strategy to inform the public about the sensitivity of alpine flora to human impacts and its slow regeneration, if any, once disturbed.
- Identify and monitor the presence of exotic, noxious and restricted vegetation.
- Develop, implement and regulate a weed-free hay program.
- Initiate appropriate weed eradication programs as necessary, focussing on restricted and noxious[3] varieties. Methods employed must not threaten native species, or the park ecosystem.
- Ensure no non-native species will be introduced when new facilities are developed.
- While there are no grazing dispositions within the WWP, grazing occurs through commercial and random equestrian use.
- In order to manage random grazing effectively, a domestic animal grazing impact assessment will be completed and recommendations for grazing carrying capacity will be developed and implemented.
- Encourage stewards and Alberta Environment to identify, initiate and monitor reclamation activities.

5.1.4 Wildlife

Objectives:

1. To maintain and preserve the natural diversity of wildlife species and populations.
2. To protect the diversity of habitats for wildlife in the Wildland Park.
3. To protect critical habitats (e.g., bats, grizzly bears and harlequin ducks).
4. To ensure regional movement corridors between Whitehorse Wildland Park (WWP) and adjacent landscapes remain effective for the species that require them.
5. To manage human and recreational use (e.g. placement of trails) so it is consistent with the conservation of, and minimizes disturbance to grizzly bears, bighorn sheep, elk, mountain goats and harlequin ducks.
6. To encourage low-impact scientific studies to contribute to the overall biodiversity database for the Wildland Park (e.g., research into the distribution of rare butterflies, insects and grizzly bears).
7. To continue to use data from ongoing research (e.g. Grizzly Bear Research Program) when reviewing the management plan and permitted activities for the Wildland Park.

Actions:

- Identify the diversity of habitats for wildlife in the park.
- Identify critical habitats through ongoing research programs.
- Cooperate and establish common objectives with Jasper National Park and the surrounding land managers to manage trans-boundary wildlife populations, particularly grizzly bears and other carnivores (e.g., wolves and wolverines).

[3] As defined in Alberta's *Weed Control Act* (Government of Alberta, 1980).

- Prohibit motorized recreation use except where defined within the WWP zoning.
- Assess the potential for mountain goat transplants into Harlequin Creek and its tributaries, Drummond and Whitehorse Creek; and monitor their populations.
- Monitor bat populations yearly.

5.1.5 Water and Riparian Habitat Management

***Objectives*:**

1. To cooperate with adjacent land users.
2. To maintain the productive capacities of habitats to support healthy and diverse fish resources.
3. To maintain the abundance and diversity of fish at the carrying capacity of the habitat.

Actions:

- Monitor water quality along water sources within the park (i.e., standard water quality parameters - fecal count, giardia, pH, hardness and turbidity).
- Monitor hydrologic qualities such as flow regimes and profiles.
- Conduct an assessment of riparian health at sites where human use is concentrated.

5.1.6 Karst Management

Objectives:

1. To employ an ecosystem-based approach to karst management.
2. To preserve the Whitehorse Wildland Park karst and Cadomin Cave system as a geologically, biologically and ecologically significant resource.
3. To foster a cooperative approach to management by encouraging close involvement of all interested parties (i.e., Alberta Speleological Society, local industry, land managers, environmental groups, research interests, cavers, weekend cavers and cave guides).
4. To recognize the Cadomin Cave for its provincial historical significance.
5. To promote cave restoration by users, "Friends Of" groups, land managers, etc. (e.g., the removal of human artifacts including spray-paint, garbage, survey marks, old rigging points and obsolete structures).

Actions:

- Develop a Karst and Cadomin Cave System Management Plan. The plan will define the boundaries of this system through a detailed large-scale map of the cave passages.
- Develop a public education strategy (e.g., on/off-site-interpretation, signage and brochures) for the Cadomin Cave and trailheads to include:
  - Cave Safety and Risk Management; and
  - Cave and Karst Interpretation.
- No camping in Cadomin Cave except under permit for scientific research and/or cave management/ maintenance.
- Unrestricted public access to the Cadomin Cave will be maintained, except during bat swarming and hibernation periods.
  - The Cadomin Cave will be closed to public access from September 1 to April 30 each year.
  - From August 1 to August 31, visitors must vacate and be 100 meters away from the cave between 7:00 p.m. and 7:00 a.m. when the bats are most active.
  - Closures to be implemented through public information, barricaded trails and the use of appropriate signage in an attempt to obtain voluntary compliance. Voluntary compliance will be monitored and further measure will be taken if necessary (i.e., closing off the cave entrance).
- Facilitate educational programs and produce materials highlighting ecological processes, geological features, intrinsic values, caving etiquette and safety of the karst area.
- Establish a data inventory of the karst area and identify key indicators to

monitor change and impacts from visitor use.

- Regulate commercial guiding activities:
  - Research and develop a permitting system based on similar systems within other protected areas (e.g., Kananaskis Country).
  - Identify all existing commercial guiding activity.
  - Ensure the completion of proper certifications and skills (e.g., first aid, safety training and membership in the Alberta Speleological Society).
  - Limit group size.
- No subsurface extraction within the Cadomin Cave system will occur of any speleothems or other cave minerals, except under permit for scientific research.
- Undertake a user survey and collect statistics to determine the level and extent of use.
  - Install a light counter in the cave and a volunteer registration box at the cave entrance.
- Conduct an inventory of the karst area features (e.g., sinks, springs, closed depressions and caves) and contents of significant caves (e.g., identify important bedrock, mineral, sediment, and fauna and flora features).
- Collect baseline cave climate data (e.g., radon, CO_2, natural gas, water quality, temperature and relative humidity).

5.1.7 Aesthetic Resource Management

Lands adjacent to the WWP experience intensive industrial and recreational land use activities. Because the park occupies high ground, the line of sight is variable and extensive.

Objectives:

1. To manage the visual integrity of Whitehorse Wildland Park.

Actions:

- Attempt to manage designated trails to have the least negative visual impact for the visitor.
- Work with adjacent land users through disposition conditions and approvals, to help mitigate visual impacts.
- Work cooperatively with adjacent land and resource managers to minimize visual impacts (within the control of the WWP management) from recreational and industrial activities.
- Develop facilities consistent with the visual integrity of the Wildland Park and natural environment.

5.1.8 Pollution Management

Some lands adjacent to the WWP experience intensive industrial and recreational land use activities.

Objectives:

1. To manage noise impacts within existing standards, and when opportunities arise, improve performance (within the control of the WWP management) from recreational and industrial activities.
2. To maintain air pollution levels within existing standards, and when opportunities arise, improve performance (within the control of WWP management) from recreational and industrial use.

Actions:

- Work with the adjacent land and resource managers through approval conditions to help mitigate noise impacts and air pollution.

5.1.9 Mineral Resource Management

There are ten subsurface mineral dispositions underlying the park. However, two surface mineral dispositions to access these resources presently exist (as of June 2000). Surface dispositions may be granted

to access subsurface rights sold before August 27, 1998.

There were three existing land use policies that provided guidance and direction for mineral resource management for the Wildland Park. These include the Eastern Slopes Policy (Government of Alberta, 1977), Coal Branch Sub-regional Integrated Resource Plan (Alberta Forestry, Lands and Wildlife, 1990a), and the Coal Branch Access Management Plan (Alberta Environmental Protection, 1994a).

Objectives:

1. To ensure the protection of ecological integrity of the WWP ecosystem is the prime consideration when honouring existing mineral rights.
2. To cooperate with industry to ensure interests of the WWP are discussed and potential negative impacts eliminated, reduced, or mitigated to the greatest extent reasonably possible.

Actions:

- Access limitations and site-specific restrictions will be applied on sensitive sites on leases.
- Dispositions sold in the Wildland Park after August 1998 will have a "no surface access" addendum.
- All surface access dispositions will be subject to the *Provincial Parks Act and dispositions regulations.*
- Applications for surface dispositions will be reviewed to determine impacts of any proposed development within the park on the vegetation, wildlife and fisheries resources, and recreation. These impacts must be thoroughly assessed by the proponent and the information made available for both government and public review prior to any approvals being issued.
- Alberta Environment staff will meet with lessees to discuss future requirements and conditions.
- Yearly proposed activity reports would be required from active leaseholders. The reports will be submitted to Alberta Environment and will include a written and mapped proposal for activity, time-frame for activity and proposed reclamation.
- Access approval for leaseholder activity will be based on minimizing the amount of environmental and recreational impact. This action may include using existing access corridors. The method of access will be restricted (i.e., the *Provincial Parks Act* prohibits unauthorized aircraft landings in the Wildland Park).
- Geophysical exploration within the WWP will be subject to the following conditions:
  - All exploration work is to be conducted utilizing heli-portable methods only. No exploration trails, drillsites, etc. will be constructed by bulldozers.
  - Seasonal restrictions may apply to all activity.
  - Existing linear disturbances will be used whenever possible.
  - In environmentally sensitive areas, exploration will be allowed to proceed only if minimal surface disturbance will occur.
  - All conventional/mechanical line cutting, outside the Wildland Park, must end 200 metres from the Wildland Park boundary with hand cutting permitted to within 100 meters. Hand stringing of geophones will be permitted to the boundary with the understanding that no surface disturbance will result and no vegetation clearing will be done.
  - When paralleling the Wildland Park, mechanically cut seismic lines must maintain a 200 metre buffer of undisturbed vegetation between the seismic line and the WWP boundary.
- Surface lease development should not be issued close to designated camping, staging and/or trail areas.

- No new access points will be made in Whitehorse Wildland Park.
- Support vehicles are restricted to areas outside the Wildland Park.
- No servicing of equipment is allowed in the Wildland Park.
- No structures can be built in the Wildland Park.
- All surface disturbances will be completely reclaimed to conform to surrounding land uses and landscapes. This action includes disturbances/leases established prior to the area becoming a Wildland Park.

5.1.10 Research

Objectives:

1. To ensure all research is conducted in a low-impact manner and is appropriate within a Wildland Park.
2. To gain clear knowledge of the Whitehorse Wildland Park and area features (e.g., geology, flora and fauna).
3. To support and cooperate in research programs with other government, non-government, industry and public organizations.
4. To ensure research projects are geared toward gaps in existing information.
5. To ensure all research is completed using "ethical standards", such as those for the University of Alberta.
6. To encourage a study of geology in the Mountain Park and Cardinal Divide areas to delineate the extent of any glacial refugia.

Actions:

- Gather, list and map the distribution of completed studies/theses for the area.
- Identify existing information gaps.
- Devise a research strategy to identify funding sources and volunteer/ corporate/government involvement to initiate biophysical research.
- Coordinate past and proposed research projects both within Whitehorse Wildland Park and in surrounding areas.
- Research permits must be obtained prior to conducting research activity and follow Alberta Environment's Policy for the Management of Research and Collection Activities (Alberta Environment, 1985).

5.1.11 Administration, Maintenance and Operational Support

Objectives:

1. To ensure administration, maintenance and operational activities support long-term management objectives and actions outlined in the management plan.
2. To continue to work cooperatively with volunteers on management objectives.

Actions:

- Develop yearly operational action plans which identify WWP priority actions (i.e., enforcement, trail maintenance, staging areas, signage, public education, reclamation, public safety, visitor services, resource and backcountry management).
- Maintain a (seasonal) Alberta Environment presence within WWP to provide enforcement, resource management, heritage appreciation and public safety services.

CULTURAL RESOURCE MANAGEMENT

5.1.12 Cultural Resources

Objectives:

1. To manage and protect significant cultural features of WWP.
2. To ensure respectful management of existing ash scattering sites and rock cairns within the park, especially along the Cardinal Divide.

Actions:

- Building new cairns or other permanent markers will be prohibited.

- Identify significant cultural features of WWP.
- Identify historical sites and resources (e.g., sawmill site/cabin along Whitehorse Creek).
- Inventory and assess cultural resources for educational potential, scientific needs and protective status.
- Remove the abandoned mining debris in "Farmers Valley"[4], and reclaim the area. Evaluate the remains of mining equipment for historical significance [i.e., crusher (Section NW 26-Twp. 47-Rge. 26)].
- Alberta Environment will identify gaps in data on cultural information and develop a strategy to gather information.
- When a significant feature has been identified, appropriate actions will be initiated to minimize impacts on the feature.
- Implement a strategy, in conjunction with local interested parties (Mountain Park cemetery stewards), for the management of memorial activities within WWP such as ash scattering.

5.1.13 Native Treaty Rights

Objectives:

1. To honour native treaty rights for hunting, fishing and traditional gathering of plant material.

Actions:

- Native rights will be honoured, but are subject to method of access restrictions outlined within this plan.
- Maintain ongoing communication and consultation with the local native peoples to determine the significance of the Wildland Park area for their culture and subsistence.
- *Refer to Hunting under Outdoor Recreation Section.*

[4] Farmers Valley is the first tributary valley that feeds into Whitehorse Creek from the north, as one walks west, from the Whitehorse Creek Provincial Recreation Area.

VOLUNTEER MANAGEMENT

5.1.14 Volunteer Management

Objectives:

1. To provide opportunities for both individuals and organizations to assist in the management and protection of WWP's natural and cultural features.
2. To maintain existing and encourage new volunteer relationships (e.g., Alpine Club of Canada, Edmonton Section, Alberta Native Plant Council, Alberta Speleological Society and Coal Branch Motorized) to continue to cooperatively manage WWP.
3. Encourage volunteers to play a key role in public education, reclamation, monitoring and research activities.
4. Encourage the public to help in reporting Wildland Park violations (e.g., deface, destroy, theft and misuse of park resources).

Actions:

- Establish a nonprofit cooperating association like a "Friends of..." to work in partnership with Alberta Environment to enhance existing and provide future projects and programs, which encourage and promote the protection, enjoyment and heritage appreciation of WWP.

5.2 HERITAGE APPRECIATION

The heritage appreciation goal used by Alberta Environment for the management of Wildland Parks is:

"*To provide opportunities for exploration and appreciation of the wilderness heritage of Alberta.*"

5.2.1 Interpretation

Objectives:

1. To allow for unstructured and structured appreciation of the natural heritage of WWP.

2. To ensure that visitor services balance WWP's preservation and outdoor recreation/tourism goals.
3. To ensure any special events are appropriate within the Wildland Park mandate and consistent with provincial polices (Alberta Environment, 1987).
4. To encourage visitors to explore the Wildland Park and learn first-hand about its natural and cultural heritage.
5. To work cooperatively with Jasper National Park on communication to increase public knowledge, appreciation and understanding of Whitehorse and area features, and opportunities for crossboundary use (e.g., Cadomin to Miette).

Actions:

- Establish a strategy for providing information to the public that includes awareness, pre-trip planning, orientation, information and natural and cultural heritage education.
- Develop maps, signs and brochures showing major trails and sites and the type of recreation access allowed where required.
- Develop a general Wildland Park brochure that provides a map as well as explains and encourages appreciation for and protection of the Wildland Parks natural and cultural features.
- Develop self-guided education tools for general public and school groups.
- Assess the need for and develop strategically placed interpretive signage.

5.3 OUTDOOR RECREATION

The Alberta Environment goal, which provides direction for outdoor recreation management within Wildland Parks follows:

"*To provide opportunities for wilderness travel and backcountry camping where recreational experiences are characterized by solitude, challenge and personal interaction with the natural environment.*"

5.3.1 General Outdoor Recreation Management

It is understood that with human population growth, increases in outdoor nature-based recreation and a greater public awareness of the Wildland Park, user levels within Whitehorse Wildland Park will increase. Wildland Park management will reflect these changes and adapt to the need for better facilities. The development of new facilities will be consistent with the primary preservation goal and visual integrity of the Wildland Park and natural environment.

Objectives:

1. To gain an understanding of existing recreational user levels and types within the WWP.
2. To gain an understanding of recreational capabilities of specific areas i.e. Whitehorse Creek and Cadomin Cave.
3. To provide a variety of environmentally appropriate day use and overnight recreational opportunities within WWP.
4. To manage recreational activities in such a way as to minimize user conflicts.
5. To encourage all visitors, through education and information, to practice low-impact recreational behaviours that respect the environment and other users.
6. To fully consider social and environmental consequences when planning and providing backcountry facilities in WWP (i.e., to preserve the area's ecological integrity and to ensure high-quality visitor experiences).
7. To provide recreational opportunities that are consistent with WWP mandate and can be feasibly managed with existing resources.
8. To consider coordinated management with Jasper National Park Backcountry Management Units.

Actions:

- Assess the existing levels and types of recreational use and their associated impacts to the ecosystem(s) within the Wildland Park.

- Work with Jasper National Park and surrounding land managers to identify ecological thresholds within the Wildland Park and manage by setting parametres for present and future recreational use, so as to minimize or eliminate negative impacts on the natural environment.
- Assess the recreational capabilities of specific areas (e.g., Whitehorse Creek and Cadomin Cave) having a high present recreational value or potential for future recreation and tourism use.
- Maintain trails and trailheads[5] for equestrian, mountain biking and hiking use in the Whitehorse Creek area.
- Maintain the educational, research, recreation and ecotourism opportunities of the Cardinal Divide.
- Monitor environmental impacts of activities and to appropriately mitigate and/or reclaim any damages.
- Adapt to increases in Wildland Park user levels by providing needed and appropriate facilities necessary to protect the integrity of the natural environment (e.g., toilets, parking lots, hardened-off campsites).
- Develop and promote low-impact backcountry user ethics.
- Develop a method for assessing environmental impacts and recreational carrying capacities within WWP. In conjunction, develop strategies to mitigate and/or reclaim negative impacts.
- Development of backcountry facilities will be limited to trails, boardwalks and trail bridges where required for visitor safety and backcountry campsites where required to minimize impacts; locations and landscape should be chosen with site sensitivity in mind.
- Implement a voluntary visitor survey system to assess use levels, patterns, trends and views.

[5] Includes educational kiosk or interpretive information.

- Limit recreational activities in sensitive features/areas.

5.3.2 General Access Management

Access management direction was founded on two existing land use policies (Coal Branch IRP and the Coal Branch Access Management Plan). Motorized and non-motorized access will now be managed as outlined in this plan.

Objectives:

1. To protect WWP unique ecosystems through sensitively managed access routes and methods.
2. To provide trails for non-motorized users.
3. To provide access for motorized activity to the Drummond/Prospect Ridge turnaround point.
4. To allow helicopter landing only for emergency or government-approved management purposes.

Actions:

- Designate formal trails/sites when user levels and impacts warrant them.
- Manage the WWP portion of the Drummond/Prospect Ridge turnaround for motorized[6] activity.
- Educate the public regarding access opportunities and regulations.

5.3.3 Trail Management

Severe erosion can develop on the steeper more heavily used trails, resulting in considerable stream and watercourse diversion. Trail maintenance will be required in these localized areas to prevent irreparable damage.

Objectives:

1. To provide a diversity of recreational and commercial opportunities while

[6] Motorized vehicles include Off Highway Vehicles (as defined in the *Off Highway Vehicle Act)*; snow machines and four-wheel drive vehicles.

maintaining the integrity of the natural environment, minimizing conflict between users and impacts on critical wildlife and their habitats.
2. To encourage Wildland Park users to stay on designated trails whenever possible and be considerate of sensitive areas and vegetation.
3. To understand existing trail use and condition.
4. To ensure minimal environmental impacts, trails may be closed or re-routed to allow for proper regeneration.
5. To promote trail etiquette.

Actions:

- Assess existing trail uses and conditions.
- Reclaim and/or maintain both designated and undesignated trails according to environmental impacts and user levels.
- Identify the main trails within WWP.
- Consider carnivore conservation needs in the identification of trails.
- Develop trail guidelines, brochures and maps to help users enjoy WWP.
- The following guidelines are adopted for trail management:
  - Maintenance methods, materials and dimensions of trails should be compatible with maintaining WWP "wildland" character.
  - Existing access corridors should be used whenever possible.
  - Seed from native plant species should be used for reclaiming trails.
  - Design, construction and repair should be innovative, with trails designed to suit the terrain.

5.3.4 Camping

Objectives:

1. To provide opportunities for designated backcountry camping[7] and random camping[8] that minimizes environmental impacts and conflict between users.
2. To minimize conflicts between campers and bears.
3. To promote low-impact backcountry camping ethics and standards.
4. To minimize camping impacts on the krummholz above treeline.

Actions:

- Fires fuelled by native wood (krummholz) are discouraged, when camping at or above treeline. The use of small burner stoves is recommended.
- Campers shall adhere to low-impact backcountry camping ethics and standards to prevent the degradation of Wildland Park ecosystems and ensure a wildland experience for future visitors.
- Where possible, horse and hiker camping areas will be separated.
- Users will be encouraged to separate their sleeping facilities from their eating areas to minimize bear/human conflicts. Where possible, bear poles will be provided. When possible, campsites will not be located near areas identified as bear movement corridors or prime bear habitat.
- Assess current use (i.e., 1999-2000) and establish criteria for designated backcountry camping.
- Open fires associated with designated backcountry camping and random backcountry camping will be allowed in the Wildland Park.
- Where there is a designated backcountry campground, people must use the fireplace or fire pit and shall not set, light or maintain a fire outside the campground within 1 km of the campground (A.R. 71/98, *Provincial Parks Act,* 1985).
- No random camping will be allowed within 1 km of designated campsites and

[7] Occurs at unmaintained identified campsites; these areas experience a higher level of use; fire rings remain.

[8] Occurs not within 1 km of designated campsites and roadways; distributed use; removal of fire rings.

roadways (A.R. 71/98, *Provincial Parks Act*, 1985).

- Fireplaces or fire pits must be properly used to reduce risk of forest fires. During high or extreme fire hazard, a fire ban may be implemented.
- There will be no camping in Cadomin Cave except under permit for scientific research and/or cave management/maintenance.
- Assess the locations, impacts and uses of existing backcountry camps using pre-established criteria.
- Campsites will be monitored for environmental impacts and deterioration using set criteria. Sites will be reclaimed and moved when necessary. Hardening off of sites will occur if user levels exceed site carrying capacity.
- Educate users about Jasper National Park's permitting process (e.g., regulations and fees) for backcountry camping trips along the Cadomin-Miette route.

5.3.5 Hiking

The main hiking trails within the Wildland Park are as follows: along the Upper and Lower Whitehorse Creek, Fiddle Pass through to Jasper National Park, along Prospect Creek/Drummond Ridge and the east and west ridge of the Cardinal Divide.

Objectives:

1. To provide opportunities for hiking in WWP.

Actions:

- Identify trails for hiking, with information on distance, elevation gain and difficulty levels.
- Trail building and maintenance will be limited to Upper Whitehorse Creek for horses, hiking and mountain biking. The Lower Whitehorse Creek and Cardinal Divide trails will be identified and minimally maintained for hiking only.

5.3.6 Hunting and Fishing

The headwaters of Whitehorse and Prospect Creeks are highly productive habitat for bighorn sheep (Alberta Forestry, Lands and Wildlife, 1990a). Fishing within the park is limited.

Objectives:

1. To provide for recreational fishing within the constraints of fish conservation (Alberta Environmental Protection, 1997) and legislative obligations.
2. To provide opportunities for recreational hunting in WWP within the existing wildlife management structure.
3. To minimize new trail establishment, especially from staging areas.

Actions:

- Fishing opportunities will be provided according to Alberta Sportfishing Regulations[9], in order to retain viable populations. Hunting will continue to be allowed in WWP except within the Cadomin Cave Preservation Zone.
- Alberta Environment, Natural Resources Service will administer hunting and fishing regulations[10].
- Hunters are encouraged to use main trails en-route to their hunting destination and be considerate of other users, public safety and sensitive areas.

5.3.7 Trapping

Objectives:

1. To honour current trapping dispositions in WWP.

Actions:

- Trapping dispositions sold prior to August 27, 1998 (the date of Wildland Park establishment) will be honoured.

[9] Subject to yearly revisions.
[10] Subject to yearly revisions.

  - There is one trapline (TPA #2262) which currently exists within the park.
- Trapping guidelines in relation to public education will be developed (i.e., including issues of trapping lifestyle and activities, public safety and conflict minimization).
  - Existing trappers' cabins can be maintained, but any additions or improvements will have to be approved by the Natural Resources Service, Alberta Environment.
  - No new cabins will be built in the Wildland Park.
- Ownership transfers of existing traplines will be permitted to immediate family members only, or must be relinquished to the province at fair market value.

5.3.8 Recreational Equestrian Use

Equestrian users currently access the Wildland Park from three staging areas: Whitehorse Creek Provincial Recreation Area; Mountain Park area (which falls to the east and outside of the Wildland Park boundary); and at the Cardinal River staging area located just south of the Wildland Park boundary where the Grave Flats Road exits the Wildland Park.

The main horse use trails are as follows: Upper Whitehorse Creek trail to the Falls; Fiddle Pass through to Jasper; the lower Prospect Creek/Drummond Ridge; along the south boundary trail which runs south-west from the Cardinal River staging area along the southern boundary of the Wildland Park; and up to the Cardinal River Headwaters area. Horses will not be allowed within the Cadomin Cave Preservation Zone or along the Cardinal Divide east and west ridges.

Objectives:

1. To provide opportunities for horse use while minimizing environmental impacts, conflict between users, and impacts on critical wildlife and their habitats.
2. To provide a coordinated approach to the management of equestrian use with Jasper National Park (e.g., educate users about regulations and permit systems).
3. To ensure public safety and to avoid competition and/or conflict with wildlife. Horses and pack animals will be controlled by the owner/operator at all times while in WWP.

Actions:

- Monitor and assess the ability of the existing trails to support horse use.
- Identify and designate equestrian trails where necessary.
- Develop primitive holding facilities as necessary to protect the environment and do so in cooperation with local outfitters and related association(s).
- Implement a weed-free hay program for all horses using the WWP staging areas.

5.3.9 Day Use

Hiking is a popular day use activity with destinations such as the Whitehorse Creek Falls and the Cardinal Divide. The Lower Whitehorse Creek trail and the Cardinal Divide trails are recommended for day use. Non-formal cross-country skiing and snowshoeing are popular along Whitehorse Creek when winter conditions are suitable. Caving is a popular day use activity. Over 1600 users were reported in one year (Equus Consulting Group Inc., 1993).

Objectives:

1. To provide opportunity for day use in WWP.
2. To promote certain trails for day use in WWP.
3. To adapt with increases in Wildland Park user levels by providing needed and appropriate facilities (i.e., toilets, picnic tables and parking lots).

Actions:

- Assess current levels and patterns of day use in WWP.

- Facilitate Wildland Park User Surveys to gather information on type and level of recreational use in the Wildland Park.
- Identify the lower trail along Whitehorse Creek for day use hiking.
- Install a vault toilet at the Cadomin Cave and Cardinal Divide parking areas.
- Install a primitive backcountry privy near the Cadomin Cave entrance.

5.3.10 Public Safety

Objectives:

1. To ensure public safety for park visitors.
2. To minimize public safety hazards (e.g., to prevent bear/human encounters) through facility and placement design and information dissemination.

Actions:

- Provide information to ensure visitor safety while enjoying WWP.
- Assess existing public safety issues and plan to mitigate emergency situations.
- Take preventative, proactive measures to ensure visitor safety.
- Establish an Emergency Response Plan that provides guidelines for aspects of public safety and emergency response (e.g., work with local RCMP, search and rescue services), fire protection and evacuation.

5.4 TOURISM

Alberta Environment uses the following tourism goal to provide direction for the management of Wildland Parks:

"*To provide unspoiled natural landscape for nature-based touring, guiding and outfitting opportunities.*"

5.4.1 General Tourism Management

Objectives:

1. To support private sector opportunities for the delivery of specialized nature-based tourism services and/or backcountry experiences.
2. To work cooperatively with local municipal governments (i.e., Hinton and Edson), Yellowhead County (i.e., Cadomin and Robb), the private sector (e.g., Foothills and Forest Tourism Association, commercial trail riders, outfitters, local campground operators), industry and volunteer organizations to assess WWP's nature-based tourism potential.
3. To emphasize tourism opportunities that enable appreciation of the Wildland Park's natural and cultural features.
4. To control commercial guiding and tourism within the Wildland Park by establishing quotas and ensuring that operators and guides abide by provincial policies (Alberta Environment, 1988) and certification guidelines.

Actions:

- The following principles should be applied when planning and assessing ecotourism opportunities in WWP:
  - First-hand experience with natural and cultural environments.
  - Involve experiencing nature on its terms, not on the traveller's terms.
  - Recognize that natural and cultural resources are the key elements of the travel experience and, therefore, accept that there are limits to use.
  - Promote a positive environmental ethic.
  - Provide benefits to participants through education and interpretation (shared experiences).
  - Provide economic benefits to the local tourism industry.
  - Include local grassroots involvement in planning through delivery.
  - Direct a portion of the economic benefits toward maintenance and enhancement or research of the resource base (Cottonwood Consultants et. al., 1991).

5.4.2 Commercial Tourism Activities

Objectives:

1. To manage commercial tourism activities within WWP according to the mandate of the Wildland Park.

Actions:

- Within existing protected areas legislation and regulations, operating conditions for the following commercial activities will be applied: Commercial Guiding, Outfitting, Trail Riding, (non-motorized) Backcountry activities and tours (e.g., caving, naturalists).
- Helicopter and aircraft landings will only be permitted for emergency or government business where necessary. The *Provincial Parks Act* prohibits unauthorized aircraft landings in the Wildland Park.
- No commercial tourism landing will be allowed. These refer to sightseeing tours and sport tours such as heli-hiking, and heli-skiing.

5.4.3 Economic Development

Objectives:

1. To support private sector tourism-related opportunities that are consistent with WWP's mandate. These endeavours should assist in creating a diversity of employment opportunities for local residents and provide net economic benefits to the region.

5.4.4 Research

Objectives:

1. To support research that investigates the various aspects of tourism in WWP, focusing on nature-based activities and their related impacts on the environment.

Actions:

- Continue user surveys that provide socioeconomic information.

5.5 REGIONAL COOPERATION

A Wildland Park cannot be viewed as an island on a landscape, therefore, it is necessary to work and participate in the management of activities beyond the protected area boundaries.

Objectives:

1. To maintain cooperative relationships with land and resource managers, (Alberta Environment and Jasper National Park) and resource users (e.g., mine operators, local campground operators, other industry and recreational users).
2. To cooperate and work with the Foothills Model Forest (e.g., Recreational User Surveys).
3. To ensure links with regional wildlife, cumulative effects assessment initiatives (e.g., Strategic Framework for Grizzly Bear Conservation).
4. To work cooperatively with local governments (e.g., Yellowhead County, Town of Hinton) and residents (e.g., Cadomin, Robb).

Actions:

- Develop cooperative monitoring and assessment programs for natural resource management.

The Cheviot Mine Project was an important consideration in the decision to establish the WWP. The Energy and Utilities Board and Canadian Environmental Assessment Agency are currently reviewing the Cheviot Mine Project. For further information, please see the Joint Alberta Energy and Utilities Board-Canadian Environmental Assessment Agency (EUB-CEAA) Joint Review Panel Cheviot Mine Project Report, 1997.

6.0 IMPLEMENTATION OF PLAN

6.1 PROJECTS IDENTIFIED IN PLAN

The following table is a list of priority projects and actions identified in the plan. Each project/action is listed with a proposed start date for initiation. Priority project/action completion will depend on manpower and the availability of funding.

Priority Project/ Actions	Proposed Start Date
Commence trail, campsite monitoring, assessment and reclamation planning.	April 2000 Ongoing
Develop trail and campsite brochures, Fact Sheets, maps and signs, and other interpretive materials.	May-September 2000
Develop a general Wildland Park brochure.	Spring 2000
Sign priority access points.	Spring 2000
Install a vault toilet at the Cadomin Cave parking area and at the Cardinal Divide.	Spring 2000
Develop a Karst Management Plan strategy.	Spring 2000
Initiate a geological inventory and site specific study.	Spring/Summer 2000
Install a primitive backcountry privy near the Cadomin Cave entrance.	Spring 2000
Management strategy for memorial ash scattering/ liaison with Mountain Park.	Spring 2000
Develop a disposition and lease management strategy.	Spring 2000
Establish new cooperative Ventures (i.e.,"Friends of...").	Ongoing
Maintain existing stewardship and stakeholder relationships.	Ongoing
Continue cooperative relationships with adjacent land managers (i.e., Jasper National Park).	Ongoing
Conduct a Visitor Survey.	Spring/Summer 2000
Develop 2000-2001 operational action plan.	April, 2000
Inventory completed studies/thesis of natural, biological and cultural resources for the area.	Fall, 2000
Establish emergency response plan/safety reviews.	Fall, 2000
Develop a public education/ communications strategy.	Spring, 2000
Complete a grazing impact assessment.	Fall, 2000
Support existing research (i.e., grizzly, harlequin ducks, goats, etc.).	Ongoing
Implement an information kiosk at the Cadomin store.	Spring, 2000
Implement the Access Management Plan.	Ongoing

6.2 PLAN REVIEW

In light of potential, significant land use changes, which may occur in the Coal Branch area, a preliminary review of this management plan will occur in five years. A major review of the management plan will occur not later than ten years from its date of approval.

Alberta Environment will initiate the review of this plan. Members of local groups and agencies, who helped in its preparation and the general public, will be asked to participate in this review.

The review will focus on the management objectives and required actions outlined in this plan. Issues that arise subsequent to the approval of this plan will also be addressed. Other sections may need updating to reflect changing situations.

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GLOSSARY OF TERMS

Aeolian (eolian)	Referring to mineral particles moved and sorted by wind, usually fine sands and coarse silt.
Alluvial	Pertaining to deposits resulting from modern flowing water (and streams) Not primarily influenced by glacial meltwaters, also "fluvial" (Achuff, 1992).
ANHIC	Alberta Natural History Information Centre; an interagency effort to compile information about elements of environmental diversity and other natural heritage information. ANHIC is focussed on compiling information about plant and vertebrate animal species with 20 or fewer known occurrences in Alberta or that are considered by conservation biologists to be of special conservation concern.
Alluvium	Deposits resulting from operations of modern rivers (Achuff, 1992).
Biota	The living component of an ecosystem.
Blue List	According to the Alberta Wildlife Status Evaluation System (Alberta Environment, 1999), current knowledge suggests that these species may be at risk. This list includes species that are particularly vulnerable because of non-cyclical declines in population or habitat, or reductions in provincial distribution. Species that are generally suspected of being at risk, but for which information is too limited to clearly define their status, have also been placed in this category to indicate the immediate need for more information. All Blue List species require more detailed work on their status or management of their populations or habitats.
Cheviot Coal Project	A proposal by Cardinal River Coals for the construction, operation and decommissioning of a coal-processing plant; the development, operation and reclamation of an open pit coal mine; the restoration of the Mountain Park subdivision rail line; the upgrading of the existing access road (the Grave Flats Road) into the Cheviot mine area; and the installation of a new transmission line and substation to supply electrical power to the Cheviot mine (EUB-CEAA, 1997).
Cirque Moraines	Small, terminal and lateral moraines formed by cirque glaciers and located in or below cirques. Cirques are deep, steep-walled amphitheatre-shaped recesses that were eroded into a mountain by glacial action. The cirque may contain a small glacier resting on the headwall and often contains a small cirque lake (or tarn) dammed by a rock lip or moraine (Taylor and Knapik, 1995).
Colluvium	A general term applied to loose and incoherent deposits, typically along steeper slopes, and brought there chiefly by gravity, without the intervention of channelled flowing water (Achuff, 1992).
Cooperating Association	A non-governmental, apolitical, not-for-profit incorporated society that is formed by local citizens to assist Alberta Environment with interpreting and promoting the natural, human heritage and recreation values of Alberta's parks. These associations provide park visitors with additional products and services above what the park can presently provide. Cooperating associations operate at "arm's length", but they support the goals and mandate of the Alberta's park system (pers. comm. Markwart, 1999).

Designated Backcountry Camping	Camping which occurs at unmaintained, identified campsites as indicated by permanent fire rings and tenting areas. Visitors frequently use these sites.
Disposition	According to the *Provincial Parks Act* disposition means an instrument entered into or issued by which an estate, right or interest in public land under the administration of the Minister is conveyed by or on behalf of the Crown to any person (Order-in-Council, 1998).
Elements	Components of environmental diversity defined at many different scales. An element may be a landform, a vegetation community or a species or subspecies of plant or animal.
Element Occurrence	Locations where elements are found.
Eolian	Material transported and deposited by wind (Achuff, 1992).
EUB-CEAA Panel Report	The *Joint Alberta Energy and Utilities Board-Canadian Environmental Assessment Association (EUB-CEAA) Joint Review Panel Report* (1997) constitutes the decisions of the joint review panel on matters that fall under the jurisdiction of the EUB and the recommendations of the Panel to the Federal Ministers of the Environment and Fisheries and Oceans on matters that fall under the jurisdiction of the federal government and, more specifically, under the jurisdiction of the *Canadian Environmental Assessment Act* (CEA Act) and the *Fisheries Act*, with regard to the Cheviot Coal Project (EUB-CEAA, 1997).
Fluvial	Pertaining to deposits by flowing water (Achuff, 1992).
Glaciofluvial	Pertaining to materials deposited by streams flowing from glaciers (Achuff, 1992).
Glaciolacustrine	Pertaining to deposits by streams on the bottom of a pro-glacial lake (Achuff, 1992).
Hibernaculum	A structure in which dormant animals hibernate.
Horn	A topographically high, sharp, pyramid-shaped mountain peak produced by the headward erosion of mountain glaciers.
Moraine	Drift or till deposited by direct glacial action without subsequent reworking (Achuff, 1992).
Noxious Weeds	Noxious weeds have the ability to spread rapidly and cause severe crop losses and economic hardships. These weeds must be controlled to prevent further establishment and spread (*Weed Control Act*, 1979).
Karst	A type of topography formed within limestone, dolomite or gypsum by dissolving or solution, and that is characterized by closed depressions or sinkholes, caves and underground drainage (Achuff, 1994).
Krummholz	A scrubby, stunted growth form of trees, often forming a characteristic zone at the limit of tree growth at high elevations.
Not Regularly Maintained (NRM)	Trail maintenance will be performed when deemed necessary.
Organic Materials	Unconsolidated sediments or deposits in which carbon is an essential, substantial component. Several types of organic materials (deposits) can be identified based on the composition of the dominant fibers (grassy organic materials, herbaceous organic materials, mossy organic materials and woody organic materials).
Parent Material	The unconsolidated and more or less chemically unweathered material from which soil develops by pedogenic processes.

Patterned Ground	Collective term for periglacial features produced by nonglacial processes operating in cold climates; Within the Cardinal Divide area these processes include frost action (frost cracking, heaving, sorting and creep) and gelifluction (solifluction associated with frozen ground) (Achuff, 1984).
Random Camping	Camping which occurs greater than 1 km from designated campsites and roadways. Random campers must practice low-impact backcountry ethics such as breaking up fire rings after use, keeping fires to a minimum and avoiding sensitive areas.
Riparian	Refers to terrain, vegetation or simply a position adjacent to or associated with a stream, flood plain, or standing waterbody.
Rock Glacier	Glacier-like tongues of angular rock that usually head in cirques and in many cases grade into true glaciers or moraines. Rock glaciers are also called talus glaciers, rock streams and rock rivers (Taylor and Knapik, 1995). At least three rock glaciers occur in the Cardinal Divide area: two in the upper part of the west fork of Drummond Creek (SW8-46-24-W5) and (SW-46-24-W5) and the other near the head of the main part of Drummond Creek (NE33-45-24-W5). Rock glaciers most typically are formed of course, blocky material and are little vegetated due largely to lack of fine soil material. The rock glacier in SW8 is unique in that the detritus that forms it contains high shale content which has weathered to a fine-textured soil. Thus this rock glacier is nearly entirely vegetated, which is a rare occurrence in the province (Achuff, 1984).
Special Terrain Features	Terrestrial landscape features that have perceived importance or value due to rarity, diversity, educational value, or scenic quality. The features are distinctive and can have either classical development and form, or unusual development and form (Taylor and Knapik, 1995).
Speleothem	A secondary mineral deposited in a cave by the action of water. Also known as a cave formation.
Soil	Unconsolidated mineral material or organic material >10 cm thick that occurs at the earth's surface and is capable of supporting plant growth. It is also the zone where the biological, physical and atmospheric components of the environments interact.
Stripe	A type of patterned ground; one of the alternating bands of fine and coarse surface material, or of rock or soil and vegetation-covered ground, commonly found on steeper slopes. It is usually straight, but may be sinuous or branching.
Talus	Coarse debris that has collected at the base of a steep slope by colluviation, a kind of colluvium (Achuff, 1992).
Tarn	A small mountain lake or pool, especially one that occupies an ice-gorged basin on the floor of a cirque (Achuff, 1992).
Thrust Fault	A reverse fault in bedrock, characterized by a low angle of uplift (Achuff, 1992).
Tundra	A level to undulating, treeless plain characteristic of arctic or alpine regions. For most of the year, the mean monthly temperature is below the freezing point.
Yellow List	Yellow A List species are sensitive species not currently believed to be at risk, but may require special management because of concern for their long-term declines. Yellow B List species are sensitive species not currently believed to be at risk, but may require special management because they are naturally rare or are associated with deteriorating habitats (http://www.gov.ab.ca/env/fw/status/eval.html).

APPENDIX A: Vegetation in Whitehorse Wildland Park

The Alberta Natural Heritage Information Centre (ANHIC) has supplied the following species lists (Recreation and Protected Areas, 1999). The element[11] records on the lists have been contributed by a number of different sources. For more information, please see *Special Features in Alberta, Proposed Framework for Site Identification and Initial Evaluation of Potential Special Features Sites* (Alberta Environmental Protection, 1998).

Criteria for considering a plant (vascular or non-vascular) taxa to be of special conservation concern are:

- The species, subspecies or variety has 20 or fewer known occurrences in Alberta (i.e., S1 and S2 ranks).
- The species, subspecies or variety is considered to be in decline or at risk.

Criteria for considering a vertebrate animal element to be of special conservation concern are:

- The species or subspecies has 20 or fewer known occurrences in Alberta.
- The species or subspecies is considered to have small populations in Alberta and may be in decline or at risk.
- Habitats for one or more species have been judged by specialists to be outstanding in a national or international context.

Global Rank	Provincial Rank	Definition of Rank
G1	S1	$\leq$ 5 occurrences or only a few remaining individuals.
G2	S2	6-20 occurrences or with many individuals in few occurrences.
G3	S3	21-100 occurrences, may be rare and local throughout its range, or in a restricted range (may be abundant in some locations) or may be vulnerable to extirpation because of some factor of its biology.
G4	S4	Apparently secure under present conditions, >100 occurrences but may be fewer with many large populations; may be rare of its range, especially peripherally.
G5	S5	Demonstrably secure under present conditions, >100 occurrences; may be rare in parts of its range, especially peripherally

Other codes: "T_" – rank for a subspecific taxon; "_?" – rank uncertain; "_U" – status uncertain; "_R" – reported but lacks documentation.

[11] As defined by ANHIC

The following chart contains all the species of plants that are found on the National Topographic System (NTS) map sheets 83 C13, 83 C14, 83 F3 and 83 F4. These are the map sheets onto which the Whitehorse Wildland Park lies. Please keep in mind that there may be some occurrences listed below which fall outside the Wildland Park boundaries.

Genus, Species	Common Name	Prov. Rank	Family
Adoxa moschatellina	moschatel	S5	ADOXACEAE
Heracleum lanatum	cow parsnip	S5	UMBELLIFERAE
Osmorhiza depauperata	spreading sweet cicely	S5	UMBELLIFERAE
Achillea millefolium	common yarrow	S5	COMPOSITAE
Agoseris aurantiaca	orange false dandelion	S4	COMPOSITAE
Agoseris glauca	yellow false dandelion	S5	COMPOSITAE
Agoseris lackschewitzii	pink false dandelion	S2	COMPOSITAE
Anaphalis margaritacea	pearly everlasting	S4	COMPOSITAE
Antennaria alpina	alpine everlasting	S4	COMPOSITAE
Antennaria lanata	woolly everlasting	S4	COMPOSITAE
Antennaria monocephala	one-headed everlasting	S2	COMPOSITAE
Antennaria neglecta	broad-leaved everlasting	S5	COMPOSITAE
Antennaria pulcherrima	showy everlasting	S4	COMPOSITAE
Antennaria racemosa	racemose everlasting	S3	COMPOSITAE
Antennaria umbrinella	brown-bracted mountain everlasting	S3	COMPOSITAE
Antennaria aromatica	scented everlasting	S2	COMPOSITAE
Antennaria rosea	rosy everlasting	S5	COMPOSITAE
Antennaria aprica	low everlasting	S5	COMPOSITAE
Arnica amplexicaulis	stem-clasping arnica	S2	COMPOSITAE
Arnica chamissonis	leafy arnica	S5	COMPOSITAE
Arnica cordifolia	heart-leaved arnica	S5	COMPOSITAE
Arnica diversifolia	lawless arnica	S3	COMPOSITAE
Arnica fulgens	shining arnica	S5	COMPOSITAE
Arnica latifolia	broad-leaved arnica	S3	COMPOSITAE
Arnica lonchophylla	spear-leaved arnica	S4	COMPOSITAE
Arnica louiseana	rock arnica	S3	COMPOSITAE
Arnica rydbergii	narrow-leaved arnica	S3	COMPOSITAE
Arnica angustifolia	alpine arnica	S4	COMPOSITAE
Arnica gracilis	graceful arnica	S3	COMPOSITAE
Artemisia biennis	biennial sagewort	S5	COMPOSITAE
Artemisia campestris	plains wormwood	S5	COMPOSITAE
Artemisia borealis	northern wormwood	S2?	COMPOSITAE
Artemisia dracunculus	dragonwort	S4	COMPOSITAE
Artemisia michauxiana	Michaux's sagewort	S4	COMPOSITAE
Artemisia norvegica	mountain sagewort	S3	COMPOSITAE
Aster alpinus	alpine aster	S4	COMPOSITAE
Aster borealis	marsh aster	S5	COMPOSITAE
Aster ciliolatus	Lindley's aster	S5	COMPOSITAE
Aster conspicuus	showy aster	S5	COMPOSITAE
Aster falcatus	creeping white prairie aster	S5	COMPOSITAE

Genus, Species	Common Name	Prov. Rank	Family
Aster laevis	smooth aster	S5	COMPOSITAE
Aster modestus	large northern aster	S5	COMPOSITAE
Aster sibiricus	Arctic aster	S5	COMPOSITAE
Erigeron compositus	compound-leaved fleabane	S5	COMPOSITAE
Erigeron glabellus	smooth fleabane	S5	COMPOSITAE
Erigeron grandiflorus	large-flowered fleabane	S3	COMPOSITAE
Erigeron humilis	purple fleabane	S3	COMPOSITAE
Erigeron pallens	pale alpine fleabane	S2	COMPOSITAE
Erigeron peregrinus	wandering daisy	S4	COMPOSITAE
Erigeron radicatus	dwarf fleabane	S2	COMPOSITAE
Erigeron trifidus	trifid-leaved fleabane	S2	COMPOSITAE
Hieracium triste	slender hawkweed	S4	COMPOSITAE
Hieracium umbellatum	narrow-leaved hawkweed	S5	COMPOSITAE
Petasites nivalis	sweet coltsfoot	S3	COMPOSITAE
Petasites palmatus	palmate-leaved coltsfoot	S5	COMPOSITAE
Petasites sagittatus	arrow-leaved coltsfoot	S5	COMPOSITAE
Saussurea nuda	dwarf saw-wort	S4	COMPOSITAE
Senecio canus	prairie groundsel	S5	COMPOSITAE
Packera buekii	ragwort	S1	COMPOSITAE
Senecio indecorus	rayless ragwort	S5	COMPOSITAE
Senecio integerrimus	entire-leaved groundsel	S4	COMPOSITAE
Senecio lugens	black-tipped groundsel	S4	COMPOSITAE
Senecio pauciflorus	few-flowered ragwort	S3	COMPOSITAE
Senecio streptanthifolius	northern ragwort	S4	COMPOSITAE
Senecio triangularis	brook ragwort	S4	COMPOSITAE
Solidago canadensis	Canada goldenrod	S5	COMPOSITAE
Solidago multiradiata	alpine goldenrod	S5	COMPOSITAE
Solidago spathulata	mountain goldenrod	S5	COMPOSITAE
Taraxacum ceratophorum	northern dandelion	S3	COMPOSITAE
Erigeron acris	northern daisy fleabane	S5	COMPOSITAE
Erigeron elatus	tall fleabane	S4	COMPOSITAE
Erigeron lonchophyllus		S5	COMPOSITAE
Alnus viridis		S5	BETULACEAE
Betula glandulosa	bog birch	S5	BETULACEAE
Betula papyrifera	white birch	S4	BETULACEAE
Betula pumila	dwarf birch	S5	BETULACEAE
Lithospermum incisum	narrow-leaved puccoon	S5	BORAGINACEAE
Mertensia paniculata	tall lungwort	S5	BORAGINACEAE
Myosotis alpestris	alpine forget-me-not	S4	BORAGINACEAE
Arabis drummondii	Drummond's rock cress	S5	CRUCIFERAE
Arabis glabra	tower mustard	S4	CRUCIFERAE
Arabis hirsuta	hairy rock cress	S5	CRUCIFERAE
Arabis lyrata	lyre-leaved rock cress	S4	CRUCIFERAE
Barbarea orthoceras	American winter cress	S2	CRUCIFERAE
Braya purpurascens	alpine braya	S1	CRUCIFERAE

Genus, Species	Common Name	Prov. Rank	Family
Cardamine pratensis	meadow bitter cress	S1	CRUCIFERAE
Descurainia pinnata	green tansy mustard	S4	CRUCIFERAE
Descurainia richardsonii		S5	CRUCIFERAE
Draba albertina	whitlow-grass	S3	CRUCIFERAE
Draba aurea	golden whitlow-grass	S5	CRUCIFERAE
Draba borealis	northern whitlow-grass	S3	CRUCIFERAE
Draba cana	whitlow-grass	S3	CRUCIFERAE
Draba crassifolia	thick-leaved whitlow-grass	S3	CRUCIFERAE
Draba fladnizensis	whitlow-grass	S1	CRUCIFERAE
Draba incerta	whitlow-grass	S4	CRUCIFERAE
Draba lonchocarpa	whitlow-grass	S3	CRUCIFERAE
Draba macounii	Macoun's whitlow-grass	S2	CRUCIFERAE
Draba nemorosa	annual whitlow-grass	S5	CRUCIFERAE
Draba nivalis	annual whitlow-grass	S3	CRUCIFERAE
Draba oligosperma	few-seeded whitlow-grass	S3	CRUCIFERAE
Draba paysonii var paysonii		SRF	CRUCIFERAE
Draba porsildii	Porsild's whitlow-grass	S3	CRUCIFERAE
Draba stenoloba	whitlow-grass	S3	CRUCIFERAE
Erysimum inconspicuum	small-flowered rocket	S5	CRUCIFERAE
Lepidium ramosissimum	branched pepper-grass	S4	CRUCIFERAE
Lesquerella arctica var purshii	northern bladderpod	S2	CRUCIFERAE
Rorippa palustris	marsh yellow cress	S5	CRUCIFERAE
Smelowskia calycina	silver rock cress	S3	CRUCIFERAE
Campanula lasiocarpa	Alaska harebell	S3	CAMPANULACEAE
Campanula rotundifolia	harebell	S5	CAMPANULACEAE
Campanula uniflora	alpine harebell	S2	CAMPANULACEAE
Arenaria longipedunculata	sandwort	S1	CARYOPHYLLACEAE
Cerastium arvense	field mouse-ear chickweed	S5	CARYOPHYLLACEAE
Cerastium beeringianum	alpine mouse-ear chickweed	S3	CARYOPHYLLACEAE
Minuartia austromontana	green alpine sandwort	S3	CARYOPHYLLACEAE
Minuartia biflora	dwarf alpine sandwort	S3	CARYOPHYLLACEAE
Minuartia elegans	purple alpine sandwort	S1	CARYOPHYLLACEAE
Minuartia rubella	red-seeded sandwort	S4	CARYOPHYLLACEAE
Moehringia lateriflora	blunt-leaved sandwort	S5	CARYOPHYLLACEAE
Silene acaulis	moss campion	S4	CARYOPHYLLACEAE
Silene drummondii	Drummond's cockle	S4	CARYOPHYLLACEAE
Silene furcata	alpine bladder catchfly	S1S2	CARYOPHYLLACEAE
Silene uralensis	nodding campion	S3	CARYOPHYLLACEAE
Stellaria calycantha	northern stitchwort	S5	CARYOPHYLLACEAE
Stellaria crassifolia	fleshy stitchwort	S5	CARYOPHYLLACEAE
Stellaria longifolia	long-leaved chickweed	S5	CARYOPHYLLACEAE
Stellaria longipes	long-stalked chickweed	S5	CARYOPHYLLACEAE
Chenopodium capitatum	strawberry blite	S5	CHENOPODIACEAE
Corispermum nitidum	bugseed	S1?	CHENOPODIACEAE
Monolepis nuttalliana	spear-leaved goosefoot	S5	CHENOPODIACEAE

Genus, Species	Common Name	Prov. Rank	Family
Callitriche verna	vernal water-starwort	S5	CALLITRICHACEAE
Cornus canadensis	bunchberry	S5	CORNACEAE
Linnaea borealis	twinflower	S5	CAPRIFOLIACEAE
Lonicera involucrata	bracted honeysuckle	S5	CAPRIFOLIACEAE
Sambucus racemosa	red elderberry	S4	CAPRIFOLIACEAE
Symphoricarpos occidentalis	buckbrush	S5	CAPRIFOLIACEAE
Viburnum edule	low-bush cranberry	S5	CAPRIFOLIACEAE
Sedum lanceolatum	lance-leaved stonecrop	S4	CRASSULACEAE
Sedum stenopetalum	narrow-petaled stonecrop	S3	CRASSULACEAE
Elaeagnus commutata	silverberry	S5	ELAEAGNACEAE
Shepherdia canadensis	Canada buffaloberry	S5	ELAEAGNACEAE
Empetrum nigrum	crowberry	S5	EMPETRACEAE
Andromeda polifolia	bog rosemary	S5	ERICACEAE
Arctostaphylos rubra	alpine bearberry	S5	ERICACEAE
Arctostaphylos uva-ursi	common bearberry	S5	ERICACEAE
Cassiope mertensiana	western mountain-heather	S5	ERICACEAE
Cassiope tetragona	white mountain-heather	S4	ERICACEAE
Kalmia microphylla	mountain laurel	S5	ERICACEAE
Ledum groenlandicum	common Labrador tea	S5	ERICACEAE
Menziesia ferruginea	false azalea	S3	ERICACEAE
Phyllodoce empetriformis	red heather	S4	ERICACEAE
Phyllodoce glanduliflora	yellow heather	S4	ERICACEAE
Rhododendron albiflorum	white-flowered rhododendron	S4	ERICACEAE
Vaccinium caespitosum	dwarf bilberry	S5	ERICACEAE
Vaccinium membranaceum	tall bilberry	S4	ERICACEAE
Vaccinium myrtilloides	common blueberry	S5	ERICACEAE
Vaccinium scoparium	grouseberry	S3	ERICACEAE
Vaccinium vitis-idaea	bog cranberry	S5	ERICACEAE
Oxycoccus microcarpus	small bog cranberry	S5	ERICACEAE
Astragalus aboriginum	Indian milk vetch	S5	LEGUMINOSAE
Astragalus striatus	ascending purple milk vetch	S5	LEGUMINOSAE
Astragalus alpinus	alpine milk vetch	S5	LEGUMINOSAE
Astragalus americanus	American milk vetch	S5	LEGUMINOSAE
Astragalus miser	timber milk vetch	S3	LEGUMINOSAE
Astragalus robbinsii	Robbins' milk vetch	S?	LEGUMINOSAE
Astragalus vexilliflexus	few-flowered milk vetch	S4	LEGUMINOSAE
Hedysarum alpinum	alpine hedysarum	S5	LEGUMINOSAE
Hedysarum boreale	northern hedysarum	S5	LEGUMINOSAE
Lathyrus ochroleucus	cream-colored vetchling	S5	LEGUMINOSAE
Oxytropis cusickii	alpine locoweed	S3	LEGUMINOSAE
Oxytropis deflexa	reflexed locoweed	S5	LEGUMINOSAE
Oxytropis podocarpa	inflated oxytrope	S4	LEGUMINOSAE
Oxytropis splendens	showy locoweed	S5	LEGUMINOSAE
Oxytropis jordalii ssp jordalii	purple mountain locoweed	S1	LEGUMINOSAE
Vicia americana	wild vetch	S5	LEGUMINOSAE

Genus, Species	Common Name	Prov. Rank	Family
Corydalis aurea	golden corydalis	S5	FUMARIACEAE
Gentiana glauca	alpine gentian	S2	GENTIANACEAE
Gentiana prostrata	moss gentian	S3	GENTIANACEAE
Gentianella amarella	felwort	S5	GENTIANACEAE
Gentianella propinqua	four-parted gentian	S4	GENTIANACEAE
Halenia deflexa	spurred gentian	S4	GENTIANACEAE
Geranium bicknellii	Bicknell's geranium	S5	GERANIACEAE
Geranium richardsonii	wild white geranium	S5	GERANIACEAE
Ribes lacustre	bristly black currant	S5	GROSSULARIACEAE
Ribes oxyacanthoides	northern gooseberry	S5	GROSSULARIACEAE
Ribes triste	wild red currant	S5	GROSSULARIACEAE
Phacelia sericea	silky scorpionweed	S4	HYDROPHYLLACEAE
Mentha arvensis	wild mint	S5	LABIATAE
Stachys palustris	marsh hedge-nettle	S5	LABIATAE
Utricularia vulgaris	common bladderwort	S5	LENTIBULARIACEAE
Menyanthes trifoliata	buck-bean	S5	MENYANTHACEAE
Epilobium anagallidifolium	alpine willowherb	S3	ONAGRACEAE
Epilobium angustifolium	common fireweed	S5	ONAGRACEAE
Epilobium ciliatum	northern willowherb	S5	ONAGRACEAE
Epilobium hornemannii	Hornemann's willowherb	S3	ONAGRACEAE
Epilobium lactiflorum	willowherb	S2	ONAGRACEAE
Epilobium latifolium	broad-leaved fireweed	S4	ONAGRACEAE
Epilobium leptocarpum	willowherb	S1	ONAGRACEAE
Epilobium palustre	marsh willowherb	S3	ONAGRACEAE
Epilobium saximontanum	Rocky Mountain willowherb	S1S2	ONAGRACEAE
Papaver kluanensis	alpine poppy	S2	PAPAVERACEAE
Papaver freedmanianum	Freedman's poppy	S1	PAPAVERACEAE
Eriogonum androsaceum	cushion umbrella-plant	S4	POLYGONACEAE
Oxyria digyna	mountain sorrel	S4	POLYGONACEAE
Polygonum amphibium	water smartweed	S5	POLYGONACEAE
Polygonum viviparum	alpine bistort	S5	POLYGONACEAE
Rumex acetosa	green sorrel	S4	POLYGONACEAE
Collomia linearis	narrow-leaved collomia	S5	POLEMONIACEAE
Polemonium viscosum	skunkweed	S3	POLEMONIACEAE
Polemonium acutiflorum	tall Jacob's-ladder	S4	POLEMONIACEAE
Plantago elongata	linear-leaved plantain	S3	PLANTAGINACEAE
Androsace chamaejasme	sweet-flowered androsace	S4	PRIMULACEAE
Androsace septentrionalis	northern fairy candelabra	S5	PRIMULACEAE
Dodecatheon pulchellum	saline shooting star	S5	PRIMULACEAE
Primula egaliksensis	primrose	S2	PRIMULACEAE
Primula incana	mealy primrose	S5	PRIMULACEAE
Moneses uniflora	one-flowered wintergreen	S5	PYROLACEAE
Orthilia secunda	one-sided wintergreen	S5	PYROLACEAE
Pyrola asarifolia	common pink wintergreen	S5	PYROLACEAE
Pyrola chlorantha	greenish-flowered wintergreen	S5	PYROLACEAE

Genus, Species	Common Name	Prov. Rank	Family
Pyrola minor	lesser wintergreen	S4	PYROLACEAE
Aconitum delphiniifolium	monkshood	S3	RANUNCULACEAE
Actaea rubra	red and white baneberry	S5	RANUNCULACEAE
Anemone lithophila	Drummond's anemone	S4	RANUNCULACEAE
Anemone multifida	cut-leaved anemone	S5	RANUNCULACEAE
Anemone parviflora	small wood anemone	S5	RANUNCULACEAE
Anemone richardsonii	yellow anemone	S3	RANUNCULACEAE
Aquilegia brevistyla	blue columbine	S5	RANUNCULACEAE
Aquilegia flavescens	yellow columbine	S5	RANUNCULACEAE
Aquilegia formosa	Sitka columbine	S2	RANUNCULACEAE
Caltha leptosepala	mountain marsh-marigold	S3	RANUNCULACEAE
Clematis occidentalis	purple clematis	S5	RANUNCULACEAE
Delphinium glaucum	tall larkspur	S5	RANUNCULACEAE
Ranunculus abortivus	small-flowered buttercup	S5	RANUNCULACEAE
Ranunculus circinatus	firm white water crowfoot	S5	RANUNCULACEAE
Ranunculus cymbalaria	seaside buttercup	S5	RANUNCULACEAE
Ranunculus eschscholtzii	mountain buttercup	S4	RANUNCULACEAE
Ranunculus gmelinii	yellow water crowfoot	S5	RANUNCULACEAE
Ranunculus hyperboreus	boreal buttercup	S3	RANUNCULACEAE
Ranunculus inamoenus	graceful buttercup	S4	RANUNCULACEAE
Ranunculus pedatifidus	northern buttercup	S4	RANUNCULACEAE
Ranunculus pygmaeus	dwarf buttercup	S3	RANUNCULACEAE
Thalictrum occidentale	western meadow rue	S4	RANUNCULACEAE
Thalictrum venulosum	veiny meadow rue	S5	RANUNCULACEAE
Trollius albiflorus	globeflower	S4	RANUNCULACEAE
Dryas drummondii	yellow mountain avens	S5	ROSACEAE
Dryas integrifolia	northern white mountain avens	S3	ROSACEAE
Dryas octopetala	white mountain avens	S4	ROSACEAE
Fragaria virginiana	wild strawberry	S5	ROSACEAE
Geum macrophyllum	large-leaved yellow avens	S5	ROSACEAE
Geum rivale	purple avens	S5	ROSACEAE
Geum triflorum	three-flowered avens	S5	ROSACEAE
Potentilla diversifolia	mountain cinquefoil	S5	ROSACEAE
Potentilla drummondii	Drummond's cinquefoil	S2	ROSACEAE
Potentilla gracilis	graceful cinquefoil	S5	ROSACEAE
Potentilla nivea	snow cinquefoil	S4	ROSACEAE
Potentilla norvegica	rough cinquefoil	S5	ROSACEAE
Potentilla ovina	sheep cinquefoil	S3	ROSACEAE
Potentilla pensylvanica	prairie cinquefoil	S5	ROSACEAE
Potentilla villosa	hairy cinquefoil	S2	ROSACEAE
Potentilla uniflora	one-flowered cinquefoil	S3	ROSACEAE
Potentilla multisecta	smooth-leaved cinquefoil	S1	ROSACEAE
Potentilla hyparctica	northern cinquefoil	S3	ROSACEAE
Potentilla bipinnatifida	plains cinquefoil	S4	ROSACEAE
Rosa acicularis	prickly rose	S5	ROSACEAE

Genus, Species	Common Name	Prov. Rank	Family
Rubus arcticus	dwarf raspberry	S5	ROSACEAE
Rubus chamaemorus	cloudberry	S5	ROSACEAE
Rubus idaeus	wild red raspberry	S5	ROSACEAE
Rubus pedatus	dwarf bramble	S4	ROSACEAE
Rubus pubescens	dewberry	S5	ROSACEAE
Sibbaldia procumbens	sibbaldia	S4	ROSACEAE
Potentilla anserina	silverweed	S5	ROSACEAE
Potentilla fruticosa	shrubby cinquefoil	S5	ROSACEAE
Galium boreale	northern bedstraw	S5	RUBIACEAE
Populus balsamifera	balsam poplar	S5	SALICACEAE
Salix alaxensis var alaxensis	Alaska willow	S2	SALICACEAE
Salix arbusculoides	shrubby willow	S4	SALICACEAE
Salix arctica	Arctic willow	S4	SALICACEAE
Salix athabascensis	Athabasca willow	S3	SALICACEAE
Salix barclayi	Barclay's willow	S3	SALICACEAE
Salix barrattiana	Barratt's willow	S4	SALICACEAE
Salix brachycarpa	short-capsuled willow	S4	SALICACEAE
Salix candida	hoary willow	S4	SALICACEAE
Salix drummondiana	Drummond's willow	S4	SALICACEAE
Salix exigua	sandbar willow	S5	SALICACEAE
Salix farriae	Farr's willow	S4	SALICACEAE
Salix glauca	smooth willow	S4	SALICACEAE
Salix myrtillifolia	myrtle-leaved willow	S5	SALICACEAE
Salix pseudomonticola	false mountain willow	S4	SALICACEAE
Salix reticulata	snow willow	S4	SALICACEAE
Salix scouleriana	Scouler's willow	S4	SALICACEAE
Salix serissima	autumn willow	S4	SALICACEAE
Salix vestita	rock willow	S4	SALICACEAE
Boykinia heucheriformis	telesonix	S2	SAXIFRAGACEAE
Chrysosplenium iowense	golden saxifrage	S3	SAXIFRAGACEAE
Chrysosplenium tetrandrum	green saxifrage	S3	SAXIFRAGACEAE
Mitella nuda	bishop's-cap	S5	SAXIFRAGACEAE
Parnassia fimbriata	fringed grass-of-parnassus	S4	PARNASSIACEAE
Parnassia kotzebuei	small grass-of-parnassus	S3	PARNASSIACEAE
Parnassia palustris	northern grass-of-parnassus	S5	PARNASSIACEAE
Parnassia parviflora	small northern grass-of-parnassus	S2	PARNASSIACEAE
Saxifraga adscendens	wedge-leaved saxifrage	S4	SAXIFRAGACEAE
Saxifraga aizoides	yellow mountain saxifrage	S4	SAXIFRAGACEAE
Saxifraga bronchialis	spotted saxifrage	S4	SAXIFRAGACEAE
Saxifraga cernua	nodding saxifrage	S4	SAXIFRAGACEAE
Saxifraga cespitosa	tufted saxifrage	S4	SAXIFRAGACEAE
Saxifraga flagellaris		SR	SAXIFRAGACEAE
Saxifraga flagellaris ssp setigera	spiderplant	S2	SAXIFRAGACEAE
Saxifraga hyperborea	brook saxifrage	S3	SAXIFRAGACEAE
Saxifraga lyallii	red-stemmed saxifrage	S4	SAXIFRAGACEAE

Genus, Species	Common Name	Prov. Rank	Family
Saxifraga nelsoniana		SR	SAXIFRAGACEAE
Saxifraga nelsoniana ssp porsildiana	Nelson's saxifrage	S2	SAXIFRAGACEAE
Saxifraga nivalis	alpine saxifrage	S2	SAXIFRAGACEAE
Saxifraga occidentalis	rhomboid-leaved saxifrage	S4	SAXIFRAGACEAE
Saxifraga oppositifolia	purple saxifrage	S4	SAXIFRAGACEAE
Saxifraga tricuspidata	three-toothed saxifrage	S3	SAXIFRAGACEAE
Tiarella unifoliata	sugarscoop	S3	SAXIFRAGACEAE
Castilleja miniata	common red paintbrush	S5	SCROPHULARIACEAE
Castilleja occidentalis	lance-leaved paintbrush	S4	SCROPHULARIACEAE
Castilleja rhexiifolia	alpine red paintbrush	S3	SCROPHULARIACEAE
Euphrasia arctica	eyebright	S3	SCROPHULARIACEAE
Pedicularis bracteosa	western lousewort	S4	SCROPHULARIACEAE
Pedicularis capitata	large-flowered lousewort	S2	SCROPHULARIACEAE
Pedicularis flammea	flame-colored lousewort	S3	SCROPHULARIACEAE
Pedicularis groenlandica	elephant's-head	S5	SCROPHULARIACEAE
Pedicularis labradorica	Labrador lousewort	S5	SCROPHULARIACEAE
Pedicularis lanata	woolly lousewort	S2	SCROPHULARIACEAE
Pedicularis arctica	Arctic lousewort	S2	SCROPHULARIACEAE
Pedicularis parviflora	swamp lousewort	S3	SCROPHULARIACEAE
Penstemon confertus	yellow beardtongue	S3	SCROPHULARIACEAE
Penstemon procerus	slender blue beardtongue	S5	SCROPHULARIACEAE
Rhinanthus minor	yellow rattle	S4	SCROPHULARIACEAE
Veronica alpina	alpine speedwell	S4	SCROPHULARIACEAE
Veronica serpyllifolia	thyme-leaved speedwell	S3	SCROPHULARIACEAE
Valeriana dioica	northern valerian	S5	VALERIANACEAE
Valeriana sitchensis	mountain valerian	S4	VALERIANACEAE
Viola adunca	early blue violet	S5	VIOLACEAE
Viola canadensis	western Canada violet	S5	VIOLACEAE
Viola palustris	marsh violet	S4	VIOLACEAE
Viola renifolia	kidney-leaved violet	S5	VIOLACEAE
Arceuthobium americanum	dwarf mistletoe	S4	LORANTHACEAE
Juniperus communis	ground juniper	S5	CUPRESSACEAE
Juniperus horizontalis	creeping juniper	S5	CUPRESSACEAE
Abies bifolia	subalpine fir	S3	PINACEAE
Picea engelmannii	Engelmann spruce	S3	PINACEAE
Picea mariana	black spruce	S5	PINACEAE
Pinus contorta	lodgepole pine	S5	PINACEAE
Carex albonigra	black-and-white sedge	S3	CYPERACEAE
Carex aperta	open sedge	S2	CYPERACEAE
Carex aquatilis	water sedge	S5	CYPERACEAE
Carex atrosquama	dark-scaled sedge	S4	CYPERACEAE
Carex aurea	golden sedge	S5	CYPERACEAE
Carex bipartita	two-parted sedge	S2	CYPERACEAE
Carex curta	short sedge	S5	CYPERACEAE
Carex capitata	capitate sedge	S2	CYPERACEAE

Genus, Species	Common Name	Prov. Rank	Family
Carex concinna	beautiful sedge	S5	CYPERACEAE
Carex eburnea	bristle-leaved sedge	S3	CYPERACEAE
Carex filifolia	thread-leaved sedge	S4	CYPERACEAE
Carex siccata	hay sedge	S5	CYPERACEAE
Carex franklinii	Franklin's sedge	S2	CYPERACEAE
Carex glacialis	glacier sedge	S2	CYPERACEAE
Carex gynocrates	northern bog sedge	S5	CYPERACEAE
Carex haydeniana	Hayden's sedge	S2	CYPERACEAE
Carex houghtoniana	sand sedge	S2	CYPERACEAE
Carex livida	livid sedge	S3	CYPERACEAE
Carex macloviana	thick-spike sedge	S3	CYPERACEAE
Carex misandra	nodding sedge	S1S2	CYPERACEAE
Carex norvegica	Norway sedge	S5	CYPERACEAE
Carex pachystachya	sedge	S3	CYPERACEAE
Carex parryana		SR	CYPERACEAE
Carex paysonis	Payson's sedge	S1S2	CYPERACEAE
Carex petricosa	stone sedge	S2	CYPERACEAE
Carex phaeocephala	head-like sedge	S3	CYPERACEAE
Carex podocarpa	alpine sedge	S2	CYPERACEAE
Carex prairea	prairie sedge	S3	CYPERACEAE
Carex pyrenaica	spiked sedge	S3	CYPERACEAE
Carex rossii	Ross' sedge	S4	CYPERACEAE
Carex rostrata	beaked sedge	S2	CYPERACEAE
Carex rupestris	rock sedge	S3	CYPERACEAE
Carex saxatilis	rocky-ground sedge	S3	CYPERACEAE
Carex scirpoidea	rush-like sedge	S5	CYPERACEAE
Carex scoparia	broom sedge	S1	CYPERACEAE
Carex scopulorum	Holn's Rocky Mountain sedge	S3	CYPERACEAE
Carex tonsa		S3	CYPERACEAE
Carex stenophylla	low sedge	S5	CYPERACEAE
Eleocharis compressa var borealis	flattened spike-rush	SU	CYPERACEAE
Scirpus hudsonianus	Hudson Bay bulrush	S3	CYPERACEAE
Eriophorum polystachion	tall cotton grass	S4	CYPERACEAE
Eriophorum callitrix	beautiful cotton grass	S2	CYPERACEAE
Eriophorum scheuchzeri	one-spike cotton grass	S3	CYPERACEAE
Eriophorum vaginatum	sheathed cotton grass	S5	CYPERACEAE
Kobresia myosuroides	bog-sedge	S3	CYPERACEAE
Kobresia simpliciuscula	simple bog-sedge	S3	CYPERACEAE
Trichophorum pumilum	dwarf bulrush	S2	CYPERACEAE
Sisyrinchium montanum	common blue-eyed grass	S5	IRIDACEAE
Triglochin maritima	seaside arrow-grass	S5	JUNCAGINACEAE
Juncus albescens	white rush	S3	JUNCACEAE
Juncus balticus	wire rush	S5	JUNCACEAE
Juncus biglumis	two-glumed rush	S2	JUNCACEAE
Juncus castaneus	chestnut rush	S3	JUNCACEAE

Genus, Species	Common Name	Prov. Rank	Family
Juncus drummondii	Drummond's rush	S3	JUNCACEAE
Juncus alpinoarticulatus	alpine rush	S5	JUNCACEAE
Luzula arcuata		SR	JUNCACEAE
Luzula arcuata ssp unalaschcensis	alpine wood-rush	S3	JUNCACEAE
Luzula multiflora	field wood-rush	S3	JUNCACEAE
Luzula parviflora	small-flowered wood-rush	S5	JUNCACEAE
Luzula spicata	spiked wood-rush	S3	JUNCACEAE
Luzula piperi	mountain wood-rush	S3	JUNCACEAE
Allium schoenoprasum	wild chives	S4	LILIACEAE
Lilium philadelphicum	western wood lily	S5	LILIACEAE
Smilacina stellata	star-flowered Solomon's-seal	S5	LILIACEAE
Smilacina trifolia	three-leaved Solomon's-seal	S5	LILIACEAE
Streptopus amplexifolius	clasping-leaved twisted-stalk	S5	LILIACEAE
Tofieldia glutinosa	sticky false asphodel	S5	LILIACEAE
Tofieldia pusilla	dwarf false asphodel	S3	LILIACEAE
Veratrum eschscholtzii	green false hellebore	S3	LILIACEAE
Zigadenus elegans	white camas	S5	LILIACEAE
Calypso bulbosa	Venus'-slipper	S5	ORCHIDACEAE
Coeloglossum viride	bracted bog orchid	S5	ORCHIDACEAE
Corallorhiza trifida	pale coralroot	S5	ORCHIDACEAE
Cypripedium passerinum	sparrow's-egg lady's-slipper	S4	ORCHIDACEAE
Listera borealis	northern twayblade	S4	ORCHIDACEAE
Platanthera hyperborea	northern green bog orchid	S5	ORCHIDACEAE
Platanthera obtusata	blunt-leaved bog orchid	S5	ORCHIDACEAE
Spiranthes romanzoffiana	hooded ladies'-tresses	S5	ORCHIDACEAE
Agrostis scabra	rough hair grass	S5	GRAMINEAE
Agrostis thurberiana	Thurber's bent grass	S2	GRAMINEAE
Agrostis variabilis	alpine redtop	S3	GRAMINEAE
Bromus inermis	awnless brome	S5	GRAMINEAE
Calamagrostis canadensis	bluejoint	S5	GRAMINEAE
Calamagrostis lapponica	Lapland reed grass	S1	GRAMINEAE
Calamagrostis purpurascens	purple reed grass	S3	GRAMINEAE
Calamagrostis inexpansa	northern reed grass	S5	GRAMINEAE
Danthonia californica	California oat grass	S3	GRAMINEAE
Deschampsia cespitosa	tufted hair grass	S5	GRAMINEAE
Elymus glaucus	smooth wild rye	S3	GRAMINEAE
Agropyron trachycaulum	slender wheat grass	S5	GRAMINEAE
Agropyron violaceum	broad-glumed wheat grass	S3	GRAMINEAE
Festuca baffinensis	Arctic fescue	S3	GRAMINEAE
Festuca brachyphylla	alpine fescue	S3	GRAMINEAE
Festuca saximontana	Rocky Mountain fescue	S5	GRAMINEAE
Anthoxanthum monticola	alpine sweet grass	S2	GRAMINEAE
Hierochloe odorata	sweet grass	S5	GRAMINEAE
Koeleria macrantha	June grass	S5	GRAMINEAE
Muhlenbergia glomerata	bog muhly	S4	GRAMINEAE

Genus, Species	Common Name	Prov. Rank	Family
Oryzopsis pungens	northern rice grass	S4	GRAMINEAE
Phleum commutatum	mountain timothy	S5	GRAMINEAE
Phragmites australis	reed	S3	GRAMINEAE
Poa alpina	alpine bluegrass	S5	GRAMINEAE
Poa arctica	Arctic bluegrass	S3	GRAMINEAE
Poa canbyi	Canby bluegrass	S5	GRAMINEAE
Poa epilis	skyline bluegrass	S3	GRAMINEAE
Poa glauca	timberline bluegrass	S5	GRAMINEAE
Poa leptocoma	bog bluegrass	S3	GRAMINEAE
Poa palustris	fowl bluegrass	S5	GRAMINEAE
Poa pattersonii	Patterson's bluegrass	S3	GRAMINEAE
Poa pratensis	Kentucky bluegrass	S5	GRAMINEAE
Poa sandbergii	Sandberg bluegrass	S5	GRAMINEAE
Poa stenantha	bluegrass	SU	GRAMINEAE
Puccinellia nuttalliana	Nuttall's salt-meadow grass	S5	GRAMINEAE
Schizachne purpurascens	purple oat grass	S5	GRAMINEAE
Trisetum montanum	mountain trisetum	S1	GRAMINEAE
Trisetum spicatum	spike trisetum	S5	GRAMINEAE
Vahlodea atropurpurea	mountain hair grass	S3	GRAMINEAE
Elymus innovatus	hairy wild rye	S5	GRAMINEAE
Potamogeton alpinus	alpine pondweed	S3	POTAMOGETONACEAE
Potamogeton gramineus	various-leaved pondweed	S4	POTAMOGETONACEAE
Cryptogramma stelleri	Steller's rock brake	S2	POLYPODIACEAE
Asplenium viride	green spleenwort	S3	POLYPODIACEAE
Cystopteris fragilis	fragile bladder fern	S5	POLYPODIACEAE
Cystopteris montana	mountain bladder fern	S2	POLYPODIACEAE
Gymnocarpium dryopteris	oak fern	S5	POLYPODIACEAE
Woodsia scopulina	mountain woodsia	S3	POLYPODIACEAE
Equisetum arvense	common horsetail	S5	EQUISETACEAE
Equisetum fluviatile	swamp horsetail	S5	EQUISETACEAE
Equisetum scirpoides	dwarf scouring-rush	S5	EQUISETACEAE
Equisetum sylvaticum	woodland horsetail	S5	EQUISETACEAE
Equisetum variegatum	variegated horsetail	S5	EQUISETACEAE
Lycopodium alpinum	alpine club-moss	S3	LYCOPODIACEAE
Lycopodium annotinum	stiff club-moss	S5	LYCOPODIACEAE
Lycopodium clavatum	running club-moss	S3	LYCOPODIACEAE
Lycopodium complanatum	ground-cedar	S5	LYCOPODIACEAE
Huperzia selago	mountain club-moss	S1	LYCOPODIACEAE
Botrychium boreale	northern grape fern	SU	OPHIOGLOSSACEAE
Botrychium dusenii	grape fern	SRF	OPHIOGLOSSACEAE
Botrychium lunaria	moonwort	S4S5	OPHIOGLOSSACEAE
Botrychium virginianum	Virginia grape fern	S4S5	OPHIOGLOSSACEAE
Botrychium spathulatum		S1S2	OPHIOGLOSSACEAE
Selaginella densa	prairie selaginella	S5	SELAGINELLACEAE
Selaginella selaginoides	spiny-edged little club-moss	S3	SELAGINELLACEAE

The following chart contains all rare element occurrences of plants and animals that are found within Whitehorse Wildland Park.

Genus, Species	Common Name	Prov. Rank	Family
Histrionicus histrionicus	Harlequin Duck	S2S3B,S1N	ANATIDAE
Lagopus leucurus	White-tailed Ptarmigan	S3	PHASIANIDAE
Myotis volans	Long-legged Bat	S2	VESPERTILIONIDAE
Lasionycteris noctivagans	Silver-haired Bat	S3B	VESPERTILIONIDAE
Salmasellus steganothrix		S2	ASELIDAE
Amblyodon dealbatus		S2	MEESIACEAE
Anoectangium aestivum		S1	POTTIACEAE
Aongstroemia longipes		S2	DICRANACEAE
Brachythecium albicans		S2?	BRACHYTHECIACEAE
Brachythecium leibergii		S2	BRACHYTHECIACEAE
Bryoerythrophyllum ferruginascens	red leaf moss	S2	POTTIACEAE
Bryum algovicum		S2	BRYACEAE
Bryum pallescens		S2	BRYACEAE
Bryum schleicheri		S1	BRYACEAE
Bryum weigelii		S3	BRYACEAE
Bryum amblyodon		S1	BRYACEAE
Bryum calobryoides		S1	BRYACEAE
Bryum stirtonii		S1S2	BRYACEAE
Cirriphyllum cirrosum		S2	BRACHYTHECIACEAE
Cynodontium schisti		S1	DICRANACEAE
Desmatodon laureri		S1	POTTIACEAE
Desmatodon leucostoma		S2	POTTIACEAE
Desmatodon systylius		S2	POTTIACEAE
Didymodon asperifolius		S?	POTTIACEAE
Didymodon johansenii		S2	POTTIACEAE
Didymodon subandreaeoides		S2	POTTIACEAE
Encalypta brevicolla	candle-snuffer moss	S2	ENCALYPTACEAE
Encalypta brevipes	candle-snuffer moss	S1	ENCALYPTACEAE
Gymnostomum aeruginosum	tufted rock beardless moss	S2?	POTTIACEAE
Hygrohypnum bestii		S2S3	AMBLYSTEGIACEAE
Mielichhoferia macrocarpa		S1	BRYACEAE
Orthothecium strictum		S2	HYPNACEAE
Orthotrichum pallens		S2	ORTHOTRICHACEAE
Plagiobryum demissum		S1	BRYACEAE
Plagiobryum zieri		S2	BRYACEAE
Pogonatum urnigerum	urn-like pogonatum	S2S3	POLYTRICHACEAE
Pohlia drummondii		S2	BRYACEAE
Pohlia longicolla		S1	BRYACEAE
Polytrichum lyallii	hair cap moss	S2	POLYTRICHACEAE
Pseudoleskeella sibirica		S2	LESKEACEAE
Seligeria campylopoda		S2	SELIGERIACEAE
Seligeria subimmersa		S2	SELIGERIACEAE

Genus, Species	Common Name	Prov. Rank	Family
Stegonia pilifera		S2	POTTIACEAE
Tayloria froelichiana	Froelichian splachnum	S1	SPLACHNACEAE
Tetraplodon urceolatus	alpine lemming moss	S2	SPLACHNACEAE
Timmia norvegica		S2	TIMMIACEAE
Tortella inclinata	bent screw moss	S2	POTTIACEAE
Tortula norvegica		S4	POTTIACEAE
Anomobryum filiforme		S2	BRYACEAE
Bryobrittonia longipes		S3	ENCALYPTACEAE
Schistidium tenerum	thread bloom moss	S1	GRIMMIACEAE
Coscinodon calyptratus	sieve-toothed moss	S2	GRIMMIACEAE
Cyrtomnium hymenophylloides		S1S2	MNIACEAE
Agoseris lackschewitzii	pink false dandelion	S2	COMPOSITAE
Antennaria monocephala	one-headed everlasting	S2	COMPOSITAE
Antennaria aromatica	scented everlasting	S2	COMPOSITAE
Arnica amplexicaulis	stem-clasping arnica	S2	COMPOSITAE
Artemisia borealis	northern wormwood	S2?	COMPOSITAE
Erigeron radicatus	dwarf fleabane	S2	COMPOSITAE
Erigeron trifidus	trifid-leaved fleabane	S2	COMPOSITAE
Petasites nivalis	sweet coltsfoot	S3	COMPOSITAE
Braya purpurascens	alpine braya	S1	CRUCIFERAE
Draba albertina	whitlow-grass	S3	CRUCIFERAE
Draba fladnizensis	whitlow-grass	S1	CRUCIFERAE
Draba macounii	Macoun's whitlow-grass	S2	CRUCIFERAE
Draba paysonii var paysonii		SRF	CRUCIFERAE
Lesquerella arctica var purshii	northern bladderpod	S2	CRUCIFERAE
Campanula lasiocarpa	Alaska harebell	S3	CAMPANULACEAE
Campanula uniflora	alpine harebell	S2	CAMPANULACEAE
Silene furcata	alpine bladder catchfly	S1S2	CARYOPHYLLACEAE
Epilobium saximontanum	Rocky Mountain willowherb	S1S2	ONAGRACEAE
Papaver kluanensis	alpine poppy	S2	PAPAVERACEAE
Primula egaliksensis	primrose	S2	PRIMULACEAE
Pyrola grandiflora	Arctic wintergreen	S2	PYROLACEAE
Aquilegia formosa	Sitka columbine	S2	RANUNCULACEAE
Ranunculus nivalis	snow buttercup	S1	RANUNCULACEAE
Potentilla drummondii	Drummond's cinquefoil	S2	ROSACEAE
Potentilla villosa	hairy cinquefoil	S2	ROSACEAE
Potentilla multisecta	smooth-leaved cinquefoil	S1	ROSACEAE
Salix alaxensis var alaxensis	Alaska willow	S2	SALICACEAE
Boykinia heucheriformis	telesonix	S2	SAXIFRAGACEAE
Parnassia parviflora	small northern grass-of-parnassus	S2	PARNASSIACEAE
Saxifraga flagellaris ssp setigera	spiderplant	S2	SAXIFRAGACEAE
Saxifraga nelsoniana ssp porsildiana	Nelson's saxifrage	S2	SAXIFRAGACEAE
Saxifraga nivalis	alpine saxifrage	S2	SAXIFRAGACEAE
Pedicularis capitata	large-flowered lousewort	S2	SCROPHULARIACEAE

Genus, Species	Common Name	Prov. Rank	Family
Pedicularis lanata	woolly lousewort	S2	SCROPHULARIACEAE
Pedicularis arctica	Arctic lousewort	S2	SCROPHULARIACEAE
Veronica serpyllifolia	thyme-leaved speedwell	S3	SCROPHULARIACEAE
Carex bipartita	two-parted sedge	S2	CYPERACEAE
Carex capitata	capitate sedge	S2	CYPERACEAE
Carex franklinii	Franklin's sedge	S2	CYPERACEAE
Carex glacialis	glacier sedge	S2	CYPERACEAE
Carex haydeniana	Hayden's sedge	S2	CYPERACEAE
Carex misandra	nodding sedge	S1S2	CYPERACEAE
Carex pauciflora	few-flowered sedge	S3	CYPERACEAE
Carex petricosa	stone sedge	S2	CYPERACEAE
Carex podocarpa	alpine sedge	S2	CYPERACEAE
Carex scopulorum	Holn's Rocky Mountain sedge	S3	CYPERACEAE
Eriophorum callitrix	beautiful cotton grass	S2	CYPERACEAE
Eriophorum scheuchzeri	one-spike cotton grass	S3	CYPERACEAE
Juncus biglumis	two-glumed rush	S2	JUNCACEAE
Luzula arcuata ssp unalaschcensis	alpine wood-rush	S3	JUNCACEAE
Agrostis thurberiana	Thurber's bent grass	S2	GRAMINEAE
Agrostis variabilis	alpine redtop	S3	GRAMINEAE
Calamagrostis lapponica	Lapland reed grass	S1	GRAMINEAE
Danthonia californica	California oat grass	S3	GRAMINEAE
Anthoxanthum monticola	alpine sweet grass	S2	GRAMINEAE
Poa leptocoma	bog bluegrass	S3	GRAMINEAE
Poa stenantha	bluegrass	SU	GRAMINEAE
Cryptogramma stelleri	Steller's rock brake	S2	POLYPODIACEAE
Huperzia selago	mountain club-moss	S1	LYCOPODIACEAE
Botrychium spathulatum		S1S2	OPHIOGLOSSACEAE

Also see the Alberta Watchable Wildlife Checklist Series:

1) Cardinal River Divide – Plants; the source used for the species names (Alberta Forestry, Lands and Wildlife, 1990).

APPENDIX B: Wildlife in Whitehorse Wildland Park

Please see the following resources for detailed species listings:

Alberta Watchable Wildlife Checklist Series:

- Cardinal River Divide – Birds; the source used for the species lists (Ealey, D.M. 1991).
- Cardinal River Divide – Fish, Amphibians, Reptiles and Mammals; the source used for the species names (Macdonald et. al., 1993).

MacCallum, B. and G.R.A. Ebel. 1985. *Ecological considerations for the wildlife of the Champion Forest Management Area, Alberta.* 275 pp.

Salt, J.R. 1985. Checklist of the Birds of the Cardinal Divide Region. *Alberta Naturalist.* Vol. 15(4): 131-133.

APPENDIX C:

WHITEHORSE WILDLAND PARK MANAGEMENT PLANNING PROCESS

	TIMELINE
Park designated by order-in-council	**August 27, 1998**
Alberta Environment initiates planning process	**January 1999**
Alberta Environment Public Advisory Group (PAG)	**February 1999**
Public Advisory Group Formulated & Terms of Reference developed	**February 1999**
Alberta Environment Supports PAG and develops and revises background documents; **Commence to define management objectives and guidelines**; **Consultation**; **Public Advisory Group** *Review draft* management objectives and actions and make recommendations	**March 1999**
	June 1999
***Draft* Management Plan (MP)**	**June 1999**
Public Advisory Group reviews *Draft MP*	**June 1999**
Environmental Resources Committee reviews *draft* and Public Review Strategy	**July 1999**
Alberta Environment Communications approves Public Review Strategy	**August 1999**
Public Review Process officially begins	**September 1999**
Draft Management Plan available for public review; Public Open Houses to gather input from public	**October 1999**
Public Review Process ends	**November 1999**
Revise Management Plan	**December 1999-January 2000**
PAG revises Management Plan	**January 2000**
Environmental Resources Committee reviews and approves revised Management Plan	**Anticipated February/ March 2000**
Minister, Alberta Environment approves Management Plan	**Anticipated March/April 2000**
Public release of Whitehorse Wildland Park Management Pl	**Anticipated April/May 2000**
Implementation of Plan	

Alberta